

Protecting Our Country's Resources: The States' Case



Orphaned Well Plugging Initiative

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PROTECTING OUR COUNTRY'S RESOURCES: THE STATES' CASE

ABSTRACT

This study was performed as part of Cooperative Agreement DE-FC26-06NT15567 with the Department of Energy National Energy Technology Laboratory. Research was undertaken as part of a larger effort to assist state governments in the effective, efficient and environmentally sound regulation of the exploration and production of natural gas and crude oil. Specific projects in the agreement include evaluating the scope of the country's orphan oil and natural gas wells and proposing solutions for permanently sealing these wells, evaluating the impact of new technologies on environmental protection, and assessing technology issues associated with wells nearing the end of productive life. Protecting Our Country's Resources: The States' Case is the culmination of an in-depth study of the country's orphan oil and natural gas wells.

The Interstate Oil and Gas Compact Commission (IOGCC) has been studying orphan wells as an ancillary segment of reports it compiled in 1992, 1996 and 2000. These reports documented the potential presence and estimated numbers of orphan wells in the United States, the plugging costs associated with them, sources of "plugging funds" for individual states, and individual state statutes and regulations associated with orphan wells.

Technology improvements, such as GIS tracking and computerized record-keeping, and introduction of innovative methods for locating orphan wells have allowed states to address identifying and plugging wells that were abandoned years, and even decades ago, by unidentified parties.

Most states define an orphan well as being inactive and having no responsible party to properly plug the well and restore the location. Well owners might have ceased to exist as a business entity or might never have been known. For purposes of this report an orphan well is described as *a well that is not producing or injecting, has not received state approval to remain idle, and for which the operator is unknown or insolvent*.

Site restoration, which involves the removal of equipment, trash and debris, the repair of erosion, and removal of hydrocarbons and closing pits, can prevent potential safety hazards and allow landowners and citizens to employ the impacted area for other uses. In some cases, there is potential for groundwater contamination and wells must be "plugged" to reduce environmental risks.

The responsibility for monitoring restoring well sites, and plugging orphan wells falls inevitably to individual states. Most oil and gas producing states have established

plugging funds derived from taxes on production, fees or other assessments to plug orphan wells. When funds fall short of the need, most states stretch their money by prioritizing wells that pose environmental hazards. Other major issues involving orphan wells are identifying them and subsequently monitoring their condition.

The current study is a continuation of the collection of data associated with orphan wells since 1992 and includes questions intended to provide a more comprehensive view of the situation. Prior years' data were analyzed and reviewed to identify trends, commonalities, and regional differences among the states. Plugging funds, changes and trends are also analyzed to give a more accurate picture of the efforts of the states to address the wells and current orphan well numbers. In addition, anecdotal reports of unique regional issues and innovative solutions are included in the report.

Data were collected by surveying the state regulatory personnel and by obtaining input from industry representatives. State oil and gas agencies were issued a survey via e-mail. The number of actual and possible orphan wells was compiled initially in March 2007 by telephone. The states were then surveyed in May and any contradicting data were resolved. Additionally, state agency representatives were personally interviewed on a one-on-one basis for more information and data confirmation.

There are approximately 50,000 wells awaiting site restoration or plugging. Remediating all sites would be an extremely large burden. Many of these wells have been prioritized according to the threat they pose to the environment. In fact, the majority of orphan wells pose little or no threat to the environment. Others, however, should be plugged in proactive programs to prevent potential environmental impacts.

In general, states should be commended for their efforts, both in finding and remediating orphan wells. The states also have set up regulatory structures that require adequate bonding or insurance coverage to prevent the likelihood of the unfunded liability of orphan wells in the future.

It must, however, be noted that while states have established plugging funds, those funds are insufficient to address timely cleanup of the remaining orphan wells. Therefore, it's essential to establish innovative programs to plug existing orphan wells.

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PREFACE

Since man discovered fire, humans around the globe continuously have sought better ways to generate power, heat and light. The use of petroleum resources actually occurred relatively early. Seep oil, oil naturally rising to the surface in a river or pond, or through a mine, has been collected since the Middle Ages. One method involved damming rivers and creeks with oil seeps located nearby to create a pond where oil could be skimmed from the surface. And, oil has been produced from wells as early as A.D. 347 in China, using bits attached to bamboo poles, which were then pounded into the ground.

It was not until the late 1800s that the value of oil and natural gas as a universal energy source became clear. California may have been one of the first states to harness the “waste” (natural gas and oil byproducts) of water or brine wells to light the Stockton Courthouse. Today, oil and natural gas account for more than 60 percent of energy consumed in the United States. The United States imports a majority, some estimate more than 58 percent, of its oil and around 16 percent of its natural gas supplies. As countries like China develop and world demand grows for petroleum resources, not only will the nation’s domestic petroleum industry become more important, but the stewardship of

existing and potential reserves will also grow in significance. Those, and the many compelling reasons to correctly manage our environment, form the basis of the long standing concern with, and study of, the nation’s orphan wells.

As the recognized authority on this subject, the IOGCC presents this report as a compelling call to action to industry, state governments and agencies and to the federal government. States call on industry to provide responsibly for the plugging and remediation of all current wells and to expand and continue the partnership to address orphan wells. The IOGCC also calls on state government to assess and address regulatory requirements to assure that wells are initiated and managed in an economically and environmentally responsible manner. The IOGCC also calls on the federal government to follow the states’ lead in identifying and plugging orphan wells located on federal properties and to release funding as provided in the Energy Policy Act of 2005.

The IOGCC thanks the states and their representatives for their diligent assistance in compiling the data for this report and for their continued efforts to find and remediate problem orphan wells.

EXECUTIVE SUMMARY

The Interstate Oil and Gas Compact Commission (IOGCC) has been studying orphan wells and the costs and regulations associated with managing these wells since 1992. Orphan wells, defined here as abandoned oil and natural gas wells that have no identified or solvent owner, have been a part of the oil and natural gas industry's landscape since the beginning. One of the fundamental issues with orphan wells is that data concerning their existence is, by definition, inexact. Data collection in the early years was incomplete at best and many owners and operators were lost in the course of history as the industry cycled through boom and bust. Post-regulation, bust cycles have continued to contribute to the number of orphan wells, but not in such daunting numbers.

The first drilling for oil and gas in the United States occurred during the early to mid-1800s. In many states, only a few wells were drilled (many of these dry holes) in the very earliest years, as wildcatters searched widely for oil and gas resources. In states where exploration activities were successful, however, a fairly large number of wells were drilled and produced prior to the enactment of state regulations. Since many of these wells were drilled between 1860 and 1930, the exact number is uncertain. On average, 60 years elapsed between the drilling of the first exploratory well and the establishment of a formal regulatory system. This resulted in the majority of the orphan wells today. In our 1999 survey, member states reported estimates of the number of pre-regulatory wells drilled in their states that indicated a potential on the low side of just over 828,000 to a high side estimate of 1.06 million wells nationally.

Currently, there are around 60,000 orphan wells on plugging lists, a figure that appears not to have shifted greatly despite the states' prodigious efforts at plugging orphan wells. This is due largely to the more aggressive approach states are taking to find the wells. States estimate that potentially more than 90,000 orphan wells exist but remain undocumented at this time. Meanwhile, states are moving to plug the known orphan wells. Some older producing areas are addressing the problem with significant increases in their state plugging funds. Other states have taken the initiative to ensure that the wells posing the greatest environmental threats are plugged first. New York has changed its prioritization to mirror the IOGCC's environmental scoring system for abandoned wells. Similarly, California has adjusted its processes so an "acute orphan well" has priority for plugging. States reporting that

their prioritization schemes for plugging wells have not changed since the last report in 2000 are Alabama, Colorado, Kentucky, Louisiana, Michigan, Nebraska, New Mexico, Oklahoma, Utah, West Virginia and Wyoming. Other states, where production occurred later, benefit from the protection of state laws and regulations at the start of their oil and natural gas history.

"Thankfully, our oil and gas regulations were in place early enough that orphan wells are not a significant problem in Nebraska," said William H. Sydow, director of the Nebraska Oil & Gas Conservation Commission. "At the present time, our agency secures funds through the budget/appropriation process and uses our commission's cash fund to plug and abandon any orphaned wells."

As part of a cooperative agreement with the Department of Energy, IOGCC has been tasked with evaluating the scope of the country's orphan oil and natural gas well situation and the efforts to manage these wells. This report is a culmination of our most current study of the nation's orphan wells and how states address problems associated with these wells. What is clear is that most states have increased their efforts and their expenditures since our first study in 1992 and are earnestly engaged in identifying and remediating orphan wells. Additionally, over the course of this period, states have made significant headway in acquiring and managing orphan well data. Still the total scope of the problem remains somewhat ambiguous.

Over the years, states have been the leaders in implementing innovative programs related to orphan well management. For example, agencies have allowed the sale of orphan wells to operators who believe a return to productive status is a possibility. Other states have considered tax credits for operators who voluntarily plug orphan wells in the vicinity of their active operations.

IOGCC member states trust that some day a report on orphan wells will be unnecessary. Their ultimate goal is to find and plug every orphan well, while taking the necessary precautions to prevent future orphan wells. The IOGCC expresses its appreciation to the participating states and agencies, not only for providing the data that form the core of this report, but also for their creative efforts to find the nation's orphan wells and adequately plug them.

INTRODUCTION

The Interstate Oil and Gas Compact Commission (IOGCC) has been studying orphan wells as an ancillary segment of reports it compiled in 1992, 1996 and 2000. These reports documented the potential presence and estimated numbers of orphan wells in the United States, the plugging costs associated with them, sources of “plugging funds” for individual states, and individual state statutes and regulations associated with orphan wells.

The advent of technology improvements, such as GIS tracking and computerized recordkeeping, and introduction of innovative methods for locating orphan wells has allowed states to begin to fully address identifying and plugging wells that were abandoned years, and even decades ago, by unidentified parties. As part of a grant with the Department of Energy, IOGCC has undertaken the task of conducting a more in-depth evaluation of the scope of the country’s orphan oil and natural gas wells and identifying potential solutions to permanently sealing these wells.

Most states define an orphan well as being inactive and having no responsible party to properly plug the well and restore the location. Well owners might have ceased to exist as a business entity or might never have been known. Some states, such as West Virginia and Indiana, have yet to statutorily define an orphan well. Kentucky and Wyoming define orphan wells as having no bonding. Although terminology used by individual states varies, for the purposes of this report, an orphan well is defined as:

A well that is not producing or injecting, has not received state approval to remain idle, and for which the operator is unknown or insolvent.

The causes of orphan wells are varied. Historically, factors that contribute to the development of orphan wells are a combination of technological capabilities of the era and the economic climate. During the earliest years of petroleum production, wells were literally abandoned. The wooden superstructure might have been salvaged for other uses and as metal replaced wood, the casings and superstructure were sometimes pulled for use in other wells or for salvage value, particularly during the two World Wars when steel was in short supply. The well hole itself was left either unplugged or plugged with tree stumps, logs, mud, or a variety of other readily available materials. Generally, wells drilled prior to the 1930s were shallow and lacked a cement plug. California was the first state to make plugging with cement mandatory,

but by then, the state estimates nearly 30,000 wells had been drilled. As drilling technology and state oversight improved, wells were going deeper and plugging procedures were established. Still, many wells pre-dating 1952 were probably plugged improperly. Early cement plugs were not always effective as their compounds lacked the chemical components to withstand down-hole temperatures and pressure, so failing to harden properly. This led to the establishment of industry standards in 1952. Recurrent bust cycles have contributed to the orphan well inventory.

The responsibility for monitoring and plugging orphan wells falls inevitably to individual states. Most oil and gas producing states have established plugging funds derived from taxes on production, fees or other assessments to plug orphan wells. The earliest funds were established in the 1960s and the latest in the 1990s. The average cost to properly drill out and plug an orphan well varies widely depending on well depth and condition, terrain and other variable factors. It covers a range from \$2,000 to \$40,000, with most states reporting an average cost between \$6,000 to \$12,000. When funds fall short of the need, most states stretch their money by prioritizing wells that pose environmental hazards. The current survey revealed 11 producing states had more than 1,000 wells approved for plugging on lists waiting for state funds. Illinois, Kansas, Kentucky, Louisiana, Missouri, New York, Ohio, Oklahoma, Pennsylvania, Texas and West Virginia all reported waiting lists numbering in the thousands, with Kentucky and Texas reporting the most at 10,600 and 11,220 wells on the waiting list respectively. In some respects, this is a measure of the states’ prodigious work in identifying and documenting orphan wells and as such is a testimony to their diligence. In other respects, it begins to reveal the size and significance of the burden many states face.

“Since the start of the current Texas program in 1991, the Texas Railroad Commission has plugged more than 41,000 wells at a total cost of approximately \$80 million,” said Texas Railroad Commissioner, Victor Carrillo. Although we consider our program a huge success, our current orphan well count still exceeds 11,000 wells. Minimizing, and ultimately eliminating, this orphan well count is a priority for me. Plugging orphan wells is an important environmental goal because it eliminates the potential damage that old, abandoned wells can pose to underground fresh water sources.” Other major issues involving orphan wells are identifying them and subsequently monitoring their condition. Location and

other data pertaining to wells drilled in the first 20 years of petroleum exploration are incomplete at best. Likewise, data concerning wells abandoned by companies that have long vanished also are incomplete. Such wells are often barely visible and are in remote areas where they have gone undetected for decades. Orphan wells can pose both physical and environmental hazards, because hydrocarbons, salts, and ground water migrate. An unplugged well creates a conduit allowing these materials to mingle, either contaminating underground aquifers and water wells, or seeping to the surface to contaminate fields, waterways, or ponds. Similarly, water and salts can migrate into and contaminate petroleum reserves through abandoned and improperly plugged orphan wells. Beyond the contamination, surface seeps can accelerate the risk and ferocity of wild fires. As unplugged wells deteriorate over time, they can cave in on themselves or give way to unsuspecting animals and humans.

The current study is a continuation of the collection of data associated with orphan wells since 1992 and included questions intended to provide a more comprehensive view of the situation. Prior years' data were analyzed and reviewed to identify trends, commonalities, and regional differences amongst the states.

Plugging funds, changes and trends are also analyzed, in order to give a more accurate picture of the efforts of the states to address the wells and current orphan well numbers. In addition, anecdotal reports of unique regional issues and innovative solutions are included in the report.

The report includes sections covering:

- Limitations of the study
- Methodology
- Study results
 - Orphan well statistics: individual and collective
 - Plugging funds
 - Security or financial assurance
 - Salvage value of orphan wells
- Efforts to find and plug orphan wells
- Statutory summary
- Recommendations
- Appendices
 - Domestic orphan wells at-a-glance
 - In-depth state-by-state descriptions
 - Statutory authority and definitions
 - Unique definitions of orphan wells
 - Security or financial assurance
 - Regional and anecdotal information

LIMITATIONS OF THE STUDY

Data on orphan wells were collected from IOGCC member states and international affiliates. Thirty-four of IOGCC's member states participated in the study, of whom eight reported no plugging activity for the period 2000 to 2006. Another 10 reported plugging activity in the hundreds, nine reported in the thousands. Again, for purposes of this study, an orphan well is defined as a well that is not producing or injecting, has not received state approval to remain idle, and for which the operator is unknown or is not solvent. At this point, there are no standardized data collection requirements for the classification of orphan wells. Each of the oil and natural gas producing regions of the United States has unique variables to contend with such as geologic formations, local and state regulations and regulatory structure, and data collection methodologies.

Among the data collected were the number of orphan wells plugged, the number of orphan wells on each state's plugging list, and the estimated number of unidentified and/or undocumented orphan wells that could potentially exist. This estimated number was gathered in hopes of anticipating the potential long-term costs to plug wells that have not yet been found. Bonding information has been compiled to demonstrate how the states are taking preventive measures to deal with abandoned and idle wells on-going, to keep wells drilled today from becoming the liability of state taxpayers in the future. Plugging regulations and prioritization schemes have been collected so the states can view the wide range of alternatives. As well, information on average cost to plug and the funds and funding sources was compiled. Statutory definitions and authority specific to orphan wells and preventing them also have been compiled.

METHODOLOGY

Data were collected by surveying the state regulatory personnel and with input from industry representatives. State oil and gas agencies were issued a survey via e-mail. The number of actual and possible orphan wells was compiled initially in March 2007 by telephone. The states were then surveyed in May and any contradicting data were resolved. Additionally, state agency representatives were personally interviewed on a one-on-one basis for additional information and data confirmation.

The study questionnaire requested information on a range of topics to provide insights into state programs addressing orphan wells. The information obtained from the states falls within the following categories:

Orphan well data. States were asked to provide the number of wells plugged, the amount of plugging funds expended, and an estimate of the number of unidentified and / or undocumented orphan wells in their state.

Plugging funds. Many states have established plugging funds to ensure that wells are properly plugged and abandoned. Several states have increased the amounts of these funds in recent years.

Security or financial assurance. Most states require some form of security or financial assurance. The methods and amounts vary, but financial assurance is required on most wells to ensure proper plugging and abandonment - even in the case of operator insolvency.

Salvage value of orphan wells. Most states can salvage lease equipment or hydrocarbons left in storage tanks and use the salvage value to offset the cost of state-funded plugging.

Efforts to find and plug orphan wells. Several states have developed programs to help find and plug orphan wells. They range from volunteer groups searching for orphan wells to states offering tax incentives to landowners willing to adopt an orphan well.

Statutory authority. Authority dealing with orphan wells.

Anecdotal information. Many states have unique regional and/or regulatory environments that provide more insight into the orphan well situation and may provide a basis for further study.

Additionally, prior years' survey data were consolidated and analyzed beginning with the initial survey year of 1992 serving as the base year. Inconsistencies were identified, adjusted and verified with the reporting state agency on a case-by-case basis. This is intended to provide a comprehensive view of orphan well status and trends since the inception of research.

DISCLAIMER

Although many efforts were made to test the accuracy and consistency of the data, conflicts remain as a result of several inherent areas. States differ as to fiscal years and data collection in the states may adhere to fiscal year time frames or may follow calendar years. Some states have broad responsibilities for plugging a variety of wells (orphan, insolvent but known operator, etc.) while others address only orphan oil and natural gas wells as defined in this study. Some states use plugging funds for site remediation, while others have separate funds. Some states consider site remediation costs as part of the cost to plug and others do not. Some states

reported data in our earliest reports that cannot be supported currently. While the states and their staffs have gone far above and beyond the call to assist us in every way to bring the basis of this data into conformity, there is still the chance that some data presented in this report may contain flaws. However, we believe that such flaws, if they exist, are not materially significant to the purpose of this report, which is principally to establish the existence and direction of states' efforts toward addressing orphan wells.

STUDY RESULTS

ORPHAN WELLS

Orphan Well Plugging Wait List. Surveyed states reported 59,222 wells on plugging or site remediation waiting lists in 2006. Since the initial study in 1992, states have reported steady increases to the number of wells on their wait lists, despite marked increases in the number of wells plugged and funds expended each survey period. States continue to locate formerly undocumented wells for a variety of reasons such as the advent of technology improvements like GIS tracking and satellite photography, computerized record-keeping, and the introduction of innovative methods for locating wells.

With 11,220 orphan wells on its plugging list, Texas reports having the most identified orphan wells waiting to be plugged, with Kentucky not far behind with 10,600. Pennsylvania and Kansas report 8,700 and 7,271 wells on waiting lists, respectively. The next cluster of significant numbers is reported by New York at 4,800, Illinois at 3,900, Louisiana at 3,183, Oklahoma and Ohio at 2,089 and Missouri at 2,000.

The number of wells waiting to be plugged in individual states at any given time may depend on a variety of factors, such as the number of oil and gas wells within the state regulatory program, the adequacy of security or financial assurance provided by oil and gas operators, the availability of state plugging funds and staff resources, and state procurement procedures. Legal issues arising from insolvency also can delay plugging by either operators or the state.

Undocumented / Unidentified Orphan Wells. In 1996, the states were asked to provide a high to low estimated range of the number of undocumented or unidentified orphan wells. This year, surveyed states were asked to estimate the number of undocumented or unidentified orphan wells not on their plugging wait lists. Surveyed states used a variety of methods to estimate the amount of undocumented or unidentified wells in their regions, from an estimate based upon historical figures, to a calculation of a percentage of wells on their current lists.

Figure 1. Total estimated orphan wells: all surveyed states (2006)

State	Wait list	Undocumented	Total Orphan Wells
Alabama	0	3	3
Alaska	15	0	15
Arkansas	577	1,200	1,777
California	430	967	1,397
Colorado	45	45	90
Florida	17	150	167
Illinois	3,900	0	3,900
Indiana	598	1,300	1,898
Kansas	7,271	10,729	18,000
Kentucky	10,600	2,500	13,100
Louisiana	3,183	625	3,808
Michigan	100	15	115
Mississippi	49	0	49
Missouri	2,000	0	2,000
Montana	90	475	565
Nebraska	6	6	12
New Mexico	134	0	134
New York	4,800	40,000	44,800
North Dakota	4	0	4
Ohio	2,089	9,000	11,089
Oklahoma	2,089	10,000	12,089
Pennsylvania	8,700	0	8,700
Tennessee			
Texas	11,220	0	11,220
Utah	8	59	67
Virginia	37	70	107
West Virginia	1,260	13,000	14,260
Wyoming	0	5	5
Grand Totals	59,222	90,149	149,371

Figure 2. Total Estimated Orphan Wells

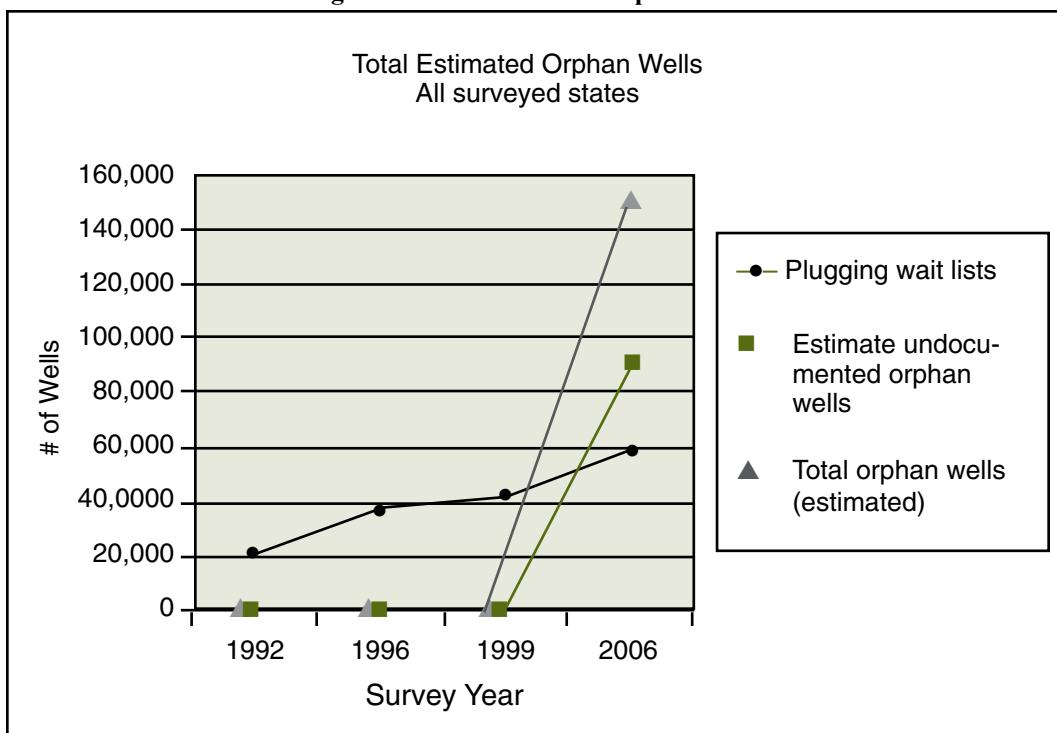


Figure 2 shows the total estimated orphan wells for all surveyed states. Prior studies reported only the number of wells on waiting lists (line). 2006 survey respondents were asked to estimate the number of undocumented and/or unidentified wells (square), which, when added to wait list figures provides an estimate of the total number of orphan wells in the nation (triangle).

The range of undocumented and/or unidentified wells is wide. Some states declined to provide an estimate, while others used a formula based on the number of undocumented wells that are discovered on average in a year and projecting forward. Six of the surveyed states, Alaska, Illinois, Missouri, North Dakota, Texas and Pennsylvania did not provide an estimate of undocumented wells. Historically, Alaska, New Mexico and North Dakota have a smaller amount of wells on their wait lists as compared to other states. The states which, in this survey, estimated the highest potential number of undocumented wells include New York with an estimate of 40,000, West Virginia with 13,000, Kansas with 10,729 and Oklahoma with 10,000. In all cases, these estimates were lower than the original low to high estimate range that states provided in 1999, which is likely indicative of the progress these states are making. Arguably, any estimate is a fluid number and is not, in itself, important. Rather this estimate is significant as an indicator of the potential cost to plug and remediate to which the states may be exposed.

As unplugged orphan wells are identified, they are generally included on waiting lists or databases established by the states and prioritized for plugging and abandonment. States prioritize among wells to be plugged, focusing on those that pose the greatest potential harm. It should be noted that states plug wells other than orphan wells and these wells affect the waiting list. Also, some orphan wells may later be adopted by an operator and returned to production or other use.

PLUGGING FUNDS

Most states have established plugging funds that vary widely, both in scope and funding mechanisms, to ensure that wells for which no or insufficient financial assurance exists are properly plugged and abandoned. As orphan wells are identified, they are included on waiting lists established by the states and prioritized for plugging. The number of wells on each state's waiting list may be different from the number of orphan wells because: states plug wells other than orphan

wells; some orphan wells may later be adopted by an operator and returned to production or other use; or because states prioritize among wells to be plugged, focusing on those that pose the greatest potential harm.

The plugging of orphan wells by state regulatory agencies remains a significant issue. While most states have increased the amounts in their plugging funds in the last six years, some states have maintained the same amount. New Mexico established an Oil and Gas Reclamation Fund in 1977. Well operators pay a percent of taxable value of sold products, of which a percentage goes to the fund. In the reporting period, New Mexico expended \$6,130,113 from the fund to plug 396 wells. Missouri and Nebraska reported the lowest expenditures and minimal plugging activity for the period \$23,890 / 8 wells and \$35,000 / 5 wells respectively. However, while Nebraska has a relatively small number of orphan wells on their data list, Missouri reports about 2,000. The number of wells waiting to be plugged in individual states at any given time may depend on a variety of factors, such as the number of oil and gas wells within the state regulatory program, the adequacy of security or financial assurance provided by oil and gas operators, the availability of state plugging funds and staff resources,

and state procurement procedures. Legal issues arising from insolvency can also delay plugging by either their operators or the state.

Plugging funds expended.

In the 1999 report 10 states reported spending \$1 million or more on plugging orphan wells, with Texas far and away the leader at a reported \$30.8 million. In the 2006 survey, 16 states reported spending \$1 million or more, with 5 states spending between \$1 and \$3 million, 3 states at \$5 to \$6 million and 6 states spending between \$8 and \$13 million, and 2 states spending upward of \$26,000. Fourteen states reported significant increases in spending for the 2000 to 2006 period over the prior report, in some cases as much as 17 times as much or more. Three states reported declines in spending, while 5 states reported spending consistent with prior periods. Clearly as states have addressed the identification of orphan wells and as the industry's fortunes have improved over recent times, states have been exceptionally diligent in addressing the need. *Data tables are located in the Appendices.*

Figure 3. Percent increase in wells plugged: All surveyed states by survey year

<i>Survey Year</i>	<i># of Wells</i>	<i>% increase (decrease)</i>
1992	7,606	
1996	12,274	61.37%
1999	23,658	92.75%
2006	28,089	18.73%
Total	71,627	

Figure 4. Total plugging funds expended: All surveyed states by survey year

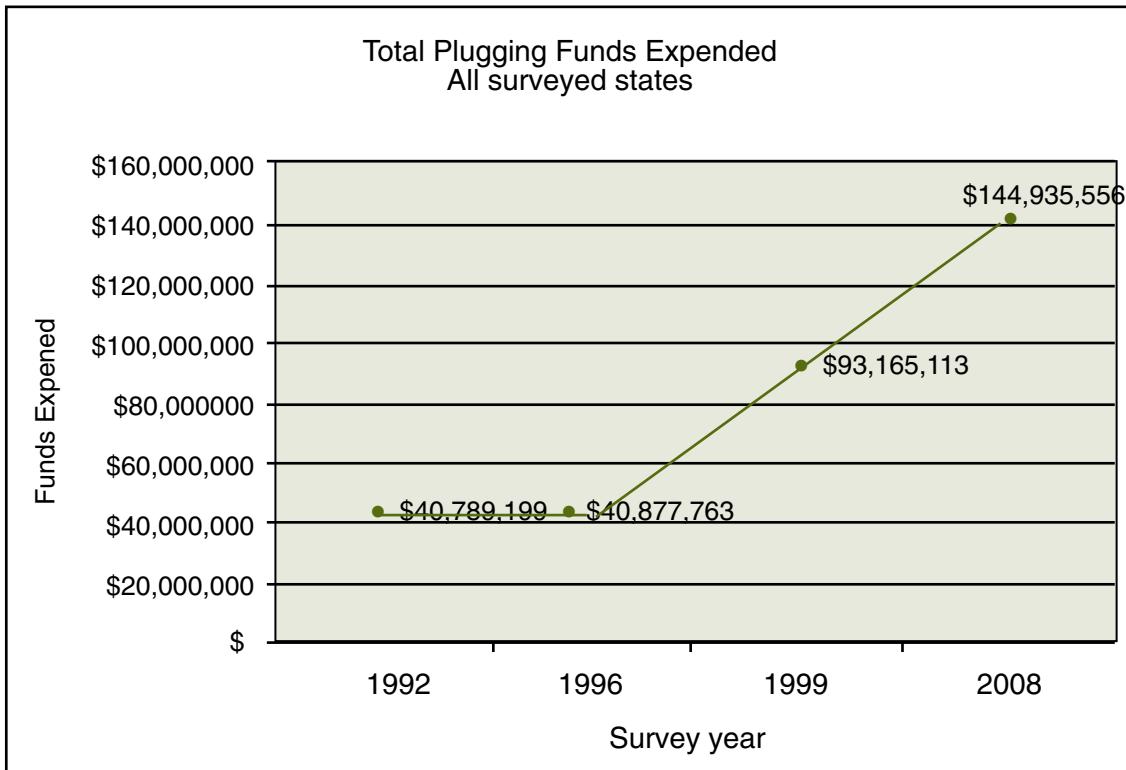
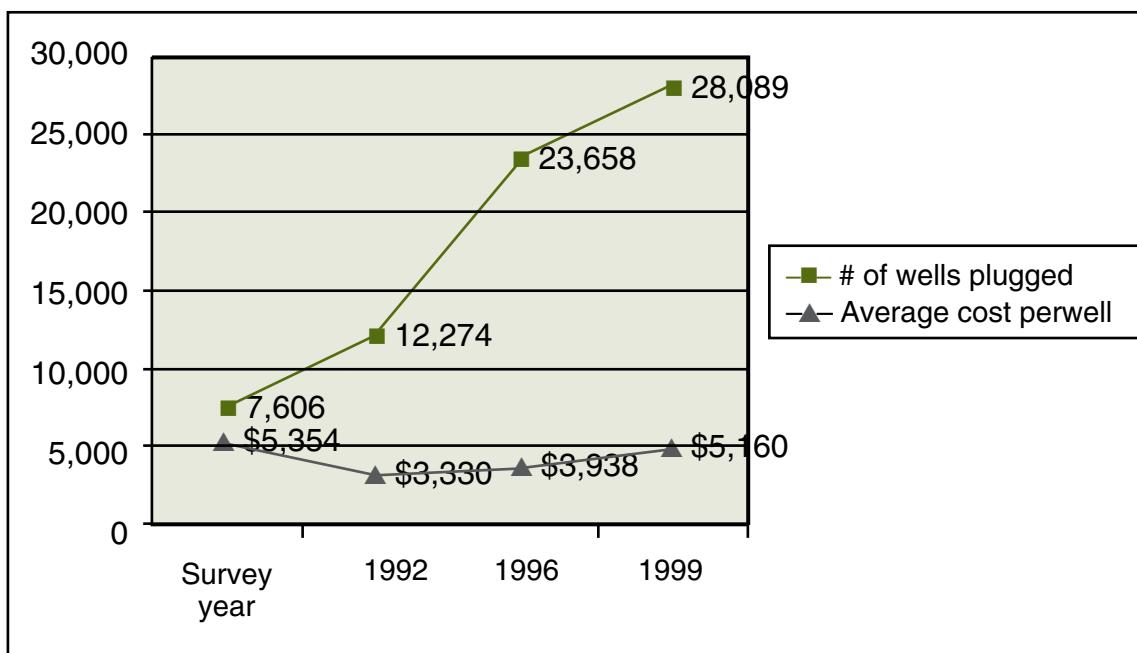


Figure 5. Total wells plugged by survey year/Average cost per well



Sources of state plugging funds.

The mechanisms used to supply the needed money to the state plugging funds vary greatly. Some states use general appropriations, but most state plugging funds sources can be grouped into four general categories: fees, public funds, revenue, and taxes. Individual states often leverage many different sources to address plugging orphan wells. For example, Michigan, Montana and Pennsylvania have two funds that can be used for the plugging of orphan wells. Michigan has an Environmental Remediation fund and an Orphan Well Fund. Pennsylvania has an Abandoned Well Plugging Fund and an Orphan Well Fund. Montana has a Resource Indemnity Trust Tax and a Damage Mitigation Account, which is funded by statutory appropriation plus bond forfeitures. From 1992 until 2005, Arkansas used general funds on a case by case basis to plug orphan wells. In 2005, the state established a Plugging Fund, which has benefited their efforts significantly. In almost every case, the sources of funding are inextricably tied to the oil and natural gas exploration and production industry in each

state. Levies, assessments, bonds or taxes are imposed on well operations and production. As a result, as the market price for oil and natural gas encourages exploration and production as it has over the recent period, funding available to states also improves. However, states are also tasked with addressing many long, unfunded needs, such as highways and bridges, so that funding for plugging orphan wells is not always a given. And, even with improved funding, the need often outstrips resources. Survey data shows that states have spent roughly \$319.1 million to plug and remediate 71,618 wells nationally, for an average cost of \$4,456 per well. If all of the nearly 150,000 orphan wells identified in this survey required state plugging, the cost to the state oil and gas regulatory agencies would be in excess of \$668 million. The reported balance in state plugging funds currently totals about \$2.8 million, which is insufficient to cover the probable plugging costs to address the 59,781 orphan wells on the states' waiting lists.

Figure 6. Sources of Plugging Funds: All surveyed states

<i>State</i>	<i>Fee</i>	<i>Fine</i>	<i>Public Revenue</i>	<i>Tax</i>
Alabama				
Alaska			✓	
Arkansas	✓			
California	✓			
Colorado				
Illinois	✓			
Indiana	✓	✓		
Kansas	✓			
Kentucky				✓
Louisiana				
Michigan				
Mississippi	✓			
Missouri		✓		
Montana				✓
Nebraska	✓			
New Mexico				✓
New York	✓	✓	✓	
North Dakota	✓	✓	✓	✓
Ohio				
Oklahoma				✓
Pennsylvania	✓			
Tennessee		✓		
Texas				
Utah				
Virginia	✓			
West Virginia				
Wyoming				

Figure 7. Sources of state plugging funds

Fees	
Annual fee	A routine fee charged to operators of oil and gas wells
Idle well fee	A fee that operators pay for an inactive, unplugged well
Permit fee	A fee that operators pay when they get a permit to produce
Civil penalties	Penalty imposed by regulating authority for noncompliance
Settlements	
Public Funds	
Appropriations	Legislative action authorizing the expenditure of public (state or local government) funds for some designated purpose
Operating budget	State Oil and Gas Agency operating budget
Revenue	
Forfeited bonds	Deposited monies paid to ensure adequate funding is available for inactive well plugging by operators
Salvage	Proceeds from the sale of any equipment or other items of value at plugging site
Taxes	
Excise tax	Tax imposed on the sale of specific goods or services, or on licenses to engage in certain activities (also called mil levy, conservation tax)
Production Assessment	A state or municipal tax on oil and gas products levied at the wellhead for the removal of the hydrocarbons. (Also called Severance Tax)

SECURITY OR FINANCIAL ASSURANCE

The primary purpose of security or financial assurance requirements in the producing states is to ensure proper plugging and abandonment of oil and gas wells in the event the operator becomes insolvent. Many states have made recent changes to upgrade their security and financial assurance requirements. The majority of oil and gas producing states require specific security or financial assurance in the form of a surety bond, cash, certificate of deposit or irrevocable letter of credit. The security or financial assurance can be used to ensure performance, plugging of the wellbore at the time of abandonment, restoration of the surface, or a combination of any of the above. The date that security or financial assurance requirements were established varies widely among the states, but the states where production started most recently have required security or financial assurance since the inception of their programs. States have security requirements for single wells as well as blanket bonds. Single well security may be based on well depth (15 states), a set fee structure (15 states), a hybrid of the two (North Dakota), or by acre of disturbed land (Virginia). Blanket bonds may likewise be based on the number of wells (8 states), a set fee structure (17 states) or a hybrid of the two (4 states).

**Figure 8. Distribution of Security Types:
All surveyed states**

Type of Security	# of states	% of states w/ type*
CD	24	80%
Cash	24	80%
Certificate of Insurance	1	3%
Escrow Account	2	7%
Financial Statements	7	23%
Letter of Credit	16	53%
Liens	2	7%
Security Interest	2	7%
Surety & Performance Bonds	30	100%

***30 states surveyed**

Figure 9. Types of Securities Permitted by States

Type	Definition
Cash Deposit	A payment given as a guarantee that an obligation will be met
CD	Certificate of Deposit
Certificate of Insurance	A formal document used to record a fact and used as proof of the fact
Consolidated Financial Fund	A user-defined combination of several consolidation units, grouped together for consolidation and reporting purposes
Escrow Account	A separate bank account, segregated from a broker's own funds, in which the broker is required by state law to deposit all monies collected for clients; in some states called a Trust Account
Financial Statements	A report of basic accounting data that helps investors understand a firm's financial history and activities
Letter of Credit, Irrevocable	A letter of credit where payment is guaranteed as long as the seller meets all conditions stipulated. A revocable letter of credit can be cancelled or altered by the buyer without permission of the seller
Liens	The right to take another's property if an obligation is not discharged
Performance Bonds	A surety bond between two parties, insuring one party against loss if the terms of a contract are not fulfilled
Security Interest	The creditor's right to take property or a portion of property offered as security
Surety Bonds	A contract by which one party agrees to make payment on any default or the debt of another party

SALVAGE VALUE OF ORPHAN WELLS

While orphan wells represent an economic liability to the state as there is often inadequate or non-existent security to cover the cost of plugging these wells and the state must plug the well first and then attempt to claim the security, orphan wells are not necessarily without economic value. On younger wells, lease equipment, hydrocarbons in storage tanks on the location and hydrocarbons that remain in the reservoir have value. Some states attempt to realize any benefit from the assets remaining on such wells. Three states, Arizona, Nebraska and Utah, attempt to determine the potential value of remaining reservoir hydrocarbons prior to plugging a well. These states look variously for the potential of enhanced recovery methods and remaining production potential. Utah, along with a few other states, contacts operators of surrounding leases for interest in taking over an orphan well. In many cases, operators will do so to protect their hydrocarbon reservoirs and as good corporate citizens.

Older wells do not frequently offer much in the way of salvage value. Texas has one of the most active well plugging programs. It reported only a very few wells had an equipment salvage value greater than the plugging costs. Usually equipment on the older wells, if still in place, has no resale value, only scrap metal value. In most states the contractor who plugs the well is allowed to take possession of the equipment, reducing the cost of plugging proportionate to

the salvage value of the equipment. While some states have experienced difficulties in the bid evaluation process, this has generally proven to be an efficient and cost-saving solution.

IOGCC: Lending a helping hand for the future

On a national front, the IOGCC has been committed to securing federal funding for the plugging of orphan wells. While states have made extensive efforts to find and plug their wells, federal funding could accelerate plugging wells posing the greatest hazards.

"There are believed to be tens of thousands of orphan wells in this country. Many of these wells are very shallow and pose no risk to the environment. However there are others that are unplugged or inadequately plugged and are a genuine threat to the environment and safety. We have to focus on these problem wells and we are working with Congress on federal funding for a permanent fix."

- North Dakota Governor John Hoeven, former chairman of the IOGCC, May 10, 2007, IOGCC 2007 Midyear Issue Summit.

EFFORTS TO FIND & PLUG

Most states have inaugurated significant programs for identifying and addressing orphan wells. The states should be commended for these efforts, and the IOGCC will continue to encourage all states to find ways to identify and address their orphan wells. Following are some innovative efforts by states to gather resources, to search for wells, to plug them, or to utilize them.

Pennsylvania: A Case Study

Pennsylvania has produced oil and natural gas since 1859 and for the first forty years was responsible for nearly half of the world's production of oil until the east Texas oil boom in 1901. Most of Pennsylvania's production of the period occurred around Titusville, in an area now known as Oil Creek State Park. Without the benefit of geologic science, Pennsylvania oilfields were discovered by physical evidence such as surface oil seeps. Wells were drilled at random and often very close together. A famous tintype from 1871 shows a location known as Triumph Hill with a veritable forest of wooden derricks. It would only be much later that petroleum engineers would understand that drilling too many well too closely together actually reduces production capability, as well as increasing environmental damage. At the time, all anyone worried about was fire. Drake's first well lasted only a couple of months before being consumed by fire.

With its long history of petroleum production, Pennsylvania was particularly concerned with orphan wells. Oil Creek State Park falls under the jurisdiction of the Pennsylvania Department of Conservation and Natural Resources (DCNR). To augment a small staff, the Park Manager would recruit summer interns to help canvas the park in search of orphan wells. Then, in 2002, a partnership was developed involving the Pennsylvania Department of Environmental Protection (DEP), the Environmental Alliance for Senior Involvement (EASI), and the Pennsylvania Senior Environment Corps (PaSEC), a statewide network of seniors who monitor water resources. EASI is a national nonprofit coalition of environmental, seniors, and volunteer organizations founded in 1991 following an agreement between the U.S. Environmental Protection Agency (EPA) and the American Association of Retired Persons (AARP). EASI typically partners with national, state, and local public and private organizations to provide opportunities for seniors to play an active, visible role in improving the environment in their communities.

PaSec, EASI, the Venango Conservation District, the DCNR and DEP established a pilot project

to train and equip senior volunteers to locate and mark orphan wells in Oil Creek State Park. The Park offered a ready combination of key success factors for the project: state land ownership providing access and administrative support, a large probability of orphan wells resulting from historical activity, and an active PaSEC volunteer cadre ready to go. DEP provided a startup grant of \$40,000.

"This is a tremendous opportunity to protect the environment in this beautiful state park, and potentially throughout northwestern Pennsylvania, where thousands of these abandoned, orphan wells exist. Oil can seep into and contaminate groundwater and surface water. Sinkholes can develop around these old wells, presenting a danger to hikers, hunters, and all visitors to Oil Creek State Park," said Pennsylvania Secretary of Environmental Protection Kathleen A. McGinty.

EASI has existing training programs for its members for its water monitoring projects. These programs include safety, site location and recording methodology. DEP and DCNR added training in operating hand-held global positions system units, mapping coordinates and downloading data for transmission to state databases. While in the field, volunteers had the support, as needed, of the Venango Conservation District and the Bureau of Oil and Gas management, DEP. The funding proficed hand-held GPS units, first aid kits, topographical maps and compasses, briar-proof pants, orange safety vests and hats, computer software, markers, flag and tags and digital cameras, as well as portable radios and walkie-talkies to communicate with state park personnel.

"We always go out in teams, no less than three and I'd say six is about the most. We get in a spaced line, set a bearing and head for it. It's hard to keep the line with the way the terrain dips and rises, but it's important for safety and to be sure we're covering the area. Sometimes a well site is just a depression in a field, maybe three or so feet across. We test the surface to see it's an open shaft. We take photos, enter a description of the site and record the latitude and longitude. The report goes to the Venango Conservation District and the DEP, who verifies the data and adds the sites to the official list," said John Kolojejchick, one of the senior volunteers participating in the Oil Creek pilot program.

As of October 2003, the PaSEC volunteers had identified 57 potential orphan wells. By June 2007, the volunteers have found and marked more than 317 orphan wells in Oil Creek State Park. With the pilot program proving so successful, the project alliance moved forward to launch a second phase, with an additional \$20,000 in funding and the desire of the seniors to increase the area of interest and build participation in the

program. Four areas were added to the project to include some game lands and forestry preserves. Four years since inception, the project has found, marked, and stored in the database the location of more than 360 orphan wells. They have logged 880 volunteer hours and spent a mere \$60,000. More than 225 of these wells have been plugged.

In addition to its extensive efforts to find and plug orphan wells; Pennsylvania also is attempting to track down liable operators. Where the state determines that a prior owner or operator received economic benefit subsequent to April 18, 1979, other than benefit derived only as a landowner or from a royalty interest, from an orphan well or from a well which has not been registered, such owner or operator is held responsible for plugging of the well.

Pennsylvania's orphan well program demonstrates that identifying orphan wells need not be a job restricted to the young or professional, or for that matter, those who get paid to do it. Nor does it necessarily require an extensive budget. The key ingredient for success is collaboration. Pennsylvania used a collaborative style that extended beyond agency offices to embrace the support and involvement of the community. By sharing resources, expertise and support, the project became affordable and effective.

California: Adopt-a-well

California's Orphan Well Program has been authorized to plug and abandon idle-deserted wells since 1976. From 1977 to 2004, 1,062 orphan wells were plugged at a cost of \$14.8 million. The program is authorized to spend up to \$1 million a year to plug orphan wells. A list of orphan wells in the state is maintained for adoption under the "adopt a well" program. This program allows prospective operators to enter into an agreement to test for further extraction of an orphan well for up to 90 days without incurring any liability for plugging. After this time, if the test is successful, the prospective operator can then adopt the well by posting a bond and becoming its permanent operator. If the test is unsuccessful, the prospective operator can walk away from the agreement without incurring any liability.

Oklahoma: Voluntary assessment

In 1993, leaders representing Oklahoma's oil producers and royalty owners, working with the Oklahoma Legislature, formed the Oklahoma Energy Resources Board (OERB). Oklahoma's natural gas producers joined soon after. At the heart of OERB's mission is the on-going commitment to restoring Oklahoma's orphaned and abandoned well sites left by operators who have since disappeared. Site restoration

includes (1) the removal of equipment, concrete, trash and debris; (2) soil erosion and scarring repair; (3) the removal of hydrocarbons; (4) closing of pits; and (5) the removal of lease roads and location pads (OERB 2008). Funded through a voluntary assessment paid by producers and royalty owners on the sale of oil and natural gas in Oklahoma, OERB's environmental restorations cost landowners and taxpayers nothing. Since 1994, Oklahoma's oil and natural gas producers and royalty owners have voluntarily contributed \$70 million. OERB has restored more than 7,800 abandoned sites.

Texas: Production tax incentives

As an incentive to put orphan wells back into production in Texas, the Legislature passed a bill to exempt gas and casinghead gas from any well the Texas Railroad Commission certified as an orphan. When the certified orphan well is put back into production by an approved operator, the well is eligible for a 100 percent exemption from natural gas production tax and the oilfield cleanup fee for as long as the certified operator manages the well.

Michigan: Industry support

Michigan's Orphan Well Fund was established in 1994 with revenue from a severance tax on the oil and gas industry. Two percent of the severance tax revenue, but not less than \$1 million, is credited to the fund annually. This funding goes toward plugging, response activity, or site restoration at abandoned or improperly closed oil and gas wells. For Fiscal Year 2004-2005, the total cost for plugging, response activity, and site restoration for all projects was \$1,167,235. However, \$164,463 was returned to the Orphan Well Fund as a result of sales from well tubing, casing, and equipment, and \$67,610 from the collection of well bonds. Fiscal Year 2004-2005 represented the tenth year that funds were expended from the fund. Nineteen wells were plugged, interim response activities were performed on three wells, and eight oil storage tanks were remediated.

Michigan also deposits funds from salvaged equipment from plugged well sites into their Orphan Well Fund. In 2006, the value of salvage totaled \$160,845. Further, the Office of Geological Survey posts a list of orphaned wells on its Web site. Operators are allowed to take over orphaned wells if they get leases for the minerals under the original drilling unit.

CANADIAN PROVINCES

The U.S. is not unique in dealing with the issue of orphan wells. All oil and gas producing countries have similar issues. In Canada, the provinces have taken aggressive steps in partnership with industry to identify and reclaim orphan wells, pipelines and facilities.

Alberta: Government/Industry collaborative partnership

Alberta has an Oil and Gas Orphan Abandonment and Reclamation Association operating as a non-profit organization under the registered trade name of the Orphan Well Association (OWA). The OWA operates under the delegated authority of the Alberta Energy and Utilities Board (EUB). OWA was established as a joint initiative between the upstream oil and gas industry and the provincial government in January 2002 and commenced operations on April 1, 2002. The Alberta government supports this initiative to deal with upstream oil and gas orphans through its regulatory agencies, Alberta Energy and Utilities Board (EUB) and Alberta Environment (AENV) which: (1) initiate appropriate enforcement actions to ensure that the responsible parties address their obligations to deal with their well and facility abandonment and reclamation liabilities, and (2) develop appropriate policies to minimize unfunded orphan liability and to prevent new orphans. The purpose of the OWA is to manage the abandonment and reclamation of upstream oil and gas orphan wells, pipelines, facilities and their associated sites.

The OWA provides information on its activities to a stakeholder group known as the Fund Advisory Committee or FAC. The FAC provides advice and input into the ongoing development of government policies related to upstream oil and gas orphans. Members of the FAC include representatives from industry - Canadian Association of Petroleum Producers (CAPP), Small Explorers and Producers Association of Canada (SEPAC), and representatives from the provincial government - the Alberta Energy and Utilities Board (EUB), Alberta Environment (AENV), Alberta Department of Energy (AE), and Alberta Sustainable Resource Development (ASRD).

The OWA operates under the direction of its members who include: the Canadian Association of Petroleum Producers (CAPP), the Small Explorers and Producers Association of Canada (SEPAC), and the EUB. Industry funds all of the costs incurred by the OWA, mostly through an Orphan Fund Levy. This levy is based on the abandonment and reclamation liabilities held by each company and it is collected annually by the EUB and remitted to the OWA.

Fiscal Year 2005/06 was a benchmark year of operations

for OWA. Expenditures on operational activities increased to an historical high of almost \$12 million compared to almost \$9 million the previous year. The focus of OWA's operations shifted in 2005/2006 from well abandonment to site reclamation, allowing OWA to catch up on its inventory of outstanding well abandonments. A significant proportion of OWA's operations was dedicated to remediation (dealing with contaminants) on orphan sites.

Saskatchewan: Updates its regulations

Saskatchewan Industry and Resources recently announced efforts to revise its regulatory environment to make it more relevant to current oil and gas development practices and technology. In 1989, the province had established an Oil and Gas Environmental Fund to address the costs of reclaiming orphan wells. Government and industry leaders have worked together as a group to establish new funding rules. The proposed changes address two key components: a security deposit system and an annual orphan fund levy. A security deposit is collected from companies whose liability is greater than their assets, with the difference between the two comprising the amount of the security deposit. This serves the dual purposes of preventing an individual without sufficient economic means from acquiring oil and gas wells or facilities and secondly should the company become bankrupt, then the security deposit will cover the cost of decommissioning and reclaiming the orphan property. In a case where the security deposit amount is insufficient to cover the cost of the necessary work, all of the oil and gas companies operating in Saskatchewan will be levied a fee, *The Orphan Fund Levy*, to make up the shortfall.

RECOMMENDATIONS

There are approximately 50,000 wells awaiting plugging that have been prioritized according to the environmental threats they pose. Plugging all orphan wells would be an extremely large financial burden on the states. Today's petroleum prices provide an incentive to identify and address orphan wells because the revenue to the states has increased and this, combined with modern technology, has enabled the states to respond to the need more aggressively.

States should be commended for their efforts to date, both in finding and remediating orphan wells. The states have also set up regulatory structures that require adequate bonding or insurance coverage, in an effort to prevent the likelihood of orphan wells in the future.

It must, however, be noted that while states have

established plugging funds, those funds are insufficient to address timely cleanup of the remaining orphan wells. Therefore, it's essential that the states, along with IOGCC, continue to explore innovative and financial means to plug all existing orphan wells. As unremediated orphan wells can cause as much damage to precious petroleum resource reserves as to the surface environment or to water resources, assistance from many directions is needed to help the states in their efforts.

An orphan oil and gas well plugging program for the states was established in Section 349 (g) and (h) of the Energy Policy Act of 2005. That legislation authorizes up to \$20 million annually in federal matching funds to help states plug their abandoned wells. However, to date no money has been appropriated. IOGCC will continue to present the cause and to educate Congress about the issues and costs related to orphan wells with the goal of seeing this legislation meet its intended goal to help the states address this significant environmental issue.

IOGCC encourages the states to continue their efforts to plug these orphaned wells in a logical manner, focusing on wells posing the greatest threats. States are encouraged to review the adequacy of financial assurance requirements for operators/owners to ensure future orphan wells will be plugged without public funds.

Still other states have employed creative approaches to find undocumented orphan wells for evaluation and to increase plugging funds. Those stories are presented here in an effort to provide states with access to new approaches that they may find useful. The IOGCC is also conducting a study of the well-closure process in hopes of identifying lower cost materials and processes to stretch limited plugging funds.

Further, both in the states and elsewhere, it is clear that the oil and natural gas industry can be creative and important partners in addressing this significant issue. The IOGCC urges states and industry to continue to work in partnership and to find ways in which to expand that partnership.

DATA TABLES

Figure 10. Plugging Funds Expended: All surveyed states per survey period

<i>*Fields marked with an “*” indicate that no data was reported or available for that survey period</i>				
State	Survey Year	Plugging funds expended	# of wells plugged	Average Cost per Well
Alabama	1992	*	*	*
	1996	*	*	*
	1999	*	*	*
	2006	*	*	*
Alabama Total		*	*	*
Alaska	1992	*	*	*
	1996	*	*	*
	1999	*	*	*
	2006	200,000	5	40,000
Alaska Total		200,000	5	40,000
Arkansas	1992	2,500	3	833
	1996	75,500	8	9,438
	1999	110,000	20	5,500
	2006	990,000	178	5,562
Arkansas Total		1,178,000	209	5,636
California	1992	2,887,000	179	16,128
	1996	1,585,000	70	22,643
	1999	4,543,000	431	10,541
	2006	8,390,282	451	18,604
California Total		17,405,282	1,131	15,389
Colorado	1992	132,193	2	66,097
	1996	454,199	30	15,140
	1999	867,085	104	8,337
	2006	1,671,944	82	20,390
Colorado Total		3,125,421	218	14,337
Florida	2006	650,000	9	72,222
Florida Total		650,000	9	72,222
Illinois	1992	75,000	12	6,250
	1996	1,025,000	243	4,218
	1999	1,800,000	783	2,299
	2006	10,100,000	2,162	4,672
Illinois Total		13,000,000	3,200	4,063
Indiana	1992	75,000	*	*
	1996	125,000	9	13,889
	1999	340,000	73	4,658
	2006	361,297	25	14,452
Indiana Total		901,297	107	8,423

**Fields marked with an “*” indicate that no data was reported or available for that survey period*

State	Survey Year	Plugging funds expended	# of wells plugged	Average Cost per Well
Kansas	1992	*	*	*
	1996	1,528,000	1,250	1,222
	1999	6,983,000	1,892	3,691
	2006	13,366,630	4,542	2,943
Kansas Total		21,877,630	7,684	2,847
Kentucky				
	1992	619,000	432	1,433
	1996	704,150	204	3,452
	1999	1,726,850	804	2,148
	2006	3,557,034	1,603	2,219
Kentucky Total		6,607,034	3,043	2,171
Louisiana	1992	153,606	6	25,601
	1996	3,246,394	121	26,830
	1999	14,431,000	627	23,016
	2006	27,169,000	974	27,894
Louisiana Total		45,000,000	1,728	26,042
Michigan	1992	1,110,900	50	22,218
	1996	1,133,000	50	22,660
	1999	6,789,100	100	67,891
	2006	4,644,874	47	98,827
Michigan Total		13,677,874	247	55,376
Mississippi	1992	*	*	*
	1996	300,000	30	10,000
	1999	500,000	55	9,091
	2006	3,380,000	255	13,255
Mississippi Total		4,180,000	340	12,294
Missouri	1992	22,000	25	880
	1996	21,000	40	525
	1999	22,500	69	326
	2006	23,890	8	2,986
Missouri Total		89,390	142	630
Montana	1992	725,000	9	80,556
	1996	1,180,000	46	25,652
	1999	3,180,000	137	23,212
	2006	3,291,481	315	10,449
Montana Total		8,376,481	507	16,522
Nebraska	1992	*	*	*
	1996	*	*	*
	1999	*	*	*
	2006	35,000	5	7,000
Nebraska Total		35,000	5	7,000

**Fields marked with an “*” indicate that no data was reported or available for that survey period*

State	Survey Year	Plugging funds expended	# of wells plugged	Average Cost per Well
New Mexico	1992	*	*	*
	1996	*	*	*
	1999	556,536	43	12,943
	2006	6,130,113	424	14,458
New Mexico Total		6,686,649	467	14,318
New York	1992	83,000	3	27,667
	1996	250,000	6	41,667
	1999	250,000	6	41,667
	2006	250,000	48	5,208
New York Total		833,000	63	13,222
North Dakota	1992	50,000	*	*
	1996	63,000	3	21,000
	1999	226,000	11	20,545
	2006	225,000	8	28,125
North Dakota Total		564,000	22	25,636
Ohio	1992	11,200,000	1,127	9,938
	1996	11,200,000	1,127	9,938
	1999	12,256,000	1,372	8,933
	2006	26,000,000	1,739	14,951
Ohio Total		60,656,000	5,365	11,306
Oklahoma	1992	889,000	292	3,045
	1996	2,360,762	514	4,593
	1999	5,970,000	1,455	4,103
	2006	3,963,564	1,497	2,648
Oklahoma Total		13,183,326	3,758	3,508
Pennsylvania	1992	814,000	38	21,421
	1996	964,000	43	22,419
	1999	814,000	57	14,281
	2006	12,755,310	1,555	8,203
Pennsylvania Total		15,347,310	1,693	9,065
Texas	1992	21,858,000	5,402	4,046
	1996	14,216,158	8,421	1,688
	1999	30,823,842	15,476	1,992
	2006	11,293,316	11,848	953
Texas Total		78,191,316	41,147	1,900
Utah	1992	*	*	*
	1996	106,000	14	7,571
	1999	283,000	46	6,152
	2006	714,594	22	32,482
Utah Total		1,103,594	82	13,458

**Fields marked with an “*” indicate that no data was reported or available for that survey period*

State	Survey Year	Plugging funds expended	# of wells plugged	Average Cost per Well
Virginia	1992	*	*	*
	1996	*	*	*
	1999	250,000	11	22,727
	2006	150,000	13	11,538
Virginia Total		400,000	24	16,667
West Virginia	1992	102,000	26	3,923
	1996	258,000	39	6,615
	1999	205,800	22	9,355
	2006	1,049,227	41	25,591
West Virginia Total		1,615,027	128	12,617
Wyoming	1992	*	*	*
	1996	82,600	6	13,767
	1999	237,400	64	3,709
	2006	4,573,000	233	19,627
Wyoming Total		4,893,000	303	16,149
Grand Total		319,776,631	71,627	4,464

Figure 11. Securities Permitted by Surveyed States

State	Date Security First Required	Modified Since 2000 Survey	Regulatory Authority Adjustment Permitted	Separate Site Restoration Bond	CD	Cash	Certificate of Insurance	Consolidated Financial Fund	Escrow Account	Financial Statements	Letter of Credit	Liens	Security Interest	Surety and/or Performance Bonds
Alabama	1945		•											•
Alaska	1958		•	•	•						•			•
Arizona	1959		•	•	•	•								•
Arkansas	1983		•		•	•					•			•
California	1931				•	•								•
Colorado	1951		•	•	•	•	•	•	•	•	•	•	•	•
Florida	1946	•	•		•	•			•					•
Illinois	1939		•		•					•				•
Indiana	1947	•			•	•								•
Kansas	1982	•				•				•	•	•		•
Kentucky														
Louisiana	2000	•	•		•						•			•
Maryland	1957				•	•					•			•
Michigan	1931		•		•	•				•	•			•

State	Date Security First Required	Modified Since 2000 Survey	Regulatory Authority Adjustment Permitted	Separate Site Restoration Bond	CD	Cash	Certificate of Insurance	Consolidated Financial Fund	Escrow Account	Financial Statements	Letter of Credit	Lien	Security Interest	Surety and/or Performance Bonds
Mississippi	1992		•			•				•	•			•
Missouri	1966		•		•						•			•
Montana	1954		•		•									•
Nebraska	1959		•		•	•								•
Nevada	1954		•		•	•								•
New Mexico	1935	•		•		•					•		•	•
New York	1963				•	•					•			•
North Dakota	1941					•								•
Ohio	1963				•	•				•	•			•
Oklahoma	1922				•	•				•	•			•
Pennsylvania	1985				•	•								•
Tennessee	1943				•	•								•
Texas	1983					•					•			•
Utah	1955	•			•	•					•			•
Virginia	1955				•	•								•
West Virginia	1963				•	•		•			•			•
Wyoming	1951				•	•					•			•

Figure 12. State security or financial assurance requirements: Single wells

State	Security	Depth (feet) or Criteria	Conditions
Alabama	MIN \$5,000 MAX \$50,000		
Alaska	MIN \$100,000		Single well bonds allowed for estimated cost of P & A if less than \$100,000
Arizona	MIN \$10,000 MAX \$20,000	< 10,000 > 10,000	
Arkansas	MIN \$3,000 MAX \$15,000		
California	MIN \$15,000 \$20,000 MAX \$30,000	< 5,000 5,001 - 9,999 > 10,000	
Colorado	\$5,000		
Florida	\$50,000 \$100,000	< 9,000 > 9,000	\$100,000 / producer \$200,000 / producer
Illinois	\$1,500 \$3,000	< 2,000 > 2,000	
Indiana	\$2,500		
Kansas	\$1		Multiplied times the aggregate depth for all wells drilled or operated
Louisiana	\$1 per foot \$2 per foot \$3 per foot	< 3,000 3,001 - 9,999 > 10,000	
Maryland	MIN \$100,000		
Michigan	MIN \$10,000 MAX \$30,000		
Mississippi	\$10,000 \$15,000 \$30,000 \$50,000	< 10,000 10,001 - 16,000 16,001 - 20,000 > 20,000	
Missouri	\$1,000 \$2,000 \$3,000 \$4,000 \$4,000	0 - 500 501 - 1,000 1,001 - 2,000 2,001 - 5000 +\$1/ ft > 5,001	
Montana	\$1,500 \$5,000 \$10,000	< 2,000 2,001 - 3,500 > 3,500	
Nebraska	\$5,000		
Nevada	\$10,000		
New Mexico	\$5,000 \$10,000	+\$1/ft +\$1/ft	Major producing counties Other counties

State	Security	Depth (feet) or Criteria	Conditions
New York	\$2,500 \$5,000 Varies	< 2,500 2,501 - 6,000 > 6,000	Security covers plugging & restoration Anticipated costs
North Dakota	\$20,000		Wells drilled to a total depth of 2,000 feet may be bonded in a lesser amount upon approval
Ohio	\$5,000		
Oklahoma	Varies		As established by licensed plugger
Pennsylvania	\$2,500		
Tennessee	\$5,000		
Texas	\$2 per foot		Total aggregate depth
Utah	\$15,000 \$120,000	< 1,000 > 1,000	
Virginia	\$10,000	+\$2,000 / per acre	
West Virginia	\$5,000		
Wyoming	\$10,000 \$20,000	< 2,000 > 2,000	

Figure 13. State security or financial assurance requirements: Blanket bonds

State	Blanket Bond	# of Wells	Amount / Conditions
Alabama	\$100,000		
Alaska	Minimum \$200,000		
Arizona	\$25,000 \$50,000 \$250,000	10 10 – 50 > 50	Can be required on state leases
Arkansas	\$25,000 \$50,000 \$100,000	< 50 > 50 > 100	
California	\$100,000 \$250,000 \$1,000,000	< 50 > 50 All wells	
Colorado	\$30,000 \$100,000	< 100 > 100	For surface: \$2,000 for non-irrigated land \$5,000 for irrigated land \$25,000 blanket statewide assurance
Florida	\$1,000,000	10	
Illinois	\$25,000 \$50,000 \$100,000	< 25 26 – 50 > 50	
Indiana	\$45,000		
Kansas	MIN \$15,000 MAX \$45,000	Varies according to depth	

State	Blanket Bond	# of Wells	Amount / Conditions
Louisiana	\$25,000 \$125,000 \$250,000	< 10 11 – 99 > 100	
Maryland	MAX \$500,000		
Michigan	MIN \$100,000 MAX \$250,000		One performance bond covers all wells
Mississippi	\$100,000		
Missouri	\$20,000 \$30,000	< 50 (0 -800 ft) < 15 (801 – 1,200 ft)	
Montana	\$50,000		
Nebraska	\$25,000		
Nevada	\$50,000		
New Mexico	\$50,000		
New York	\$25,000 - \$100,000 \$40,000 - \$150,000		
North Dakota	\$50,000 \$100,000	< 10 > 10	The \$50,000 blanket bond is limited in its coverage to contain no more than three unplugged dry holes, plugged wells with site not reclaimed, and/or abandoned wells; The \$100,000 bond is limited to six
Ohio	\$15,000 \$30,000		\$30,000 bond for financial statements
Oklahoma	\$25,000 \$50,000		Net worth for financial statement
Pennsylvania	\$25,000		Security covers drilling, plugging, water supply, replacement and restoration
Tennessee	\$20,000		Required when the landowner/lessee is not party to the leasing agreement
Texas	\$25,000 \$50,000 \$250,000	1 – 10 11 – 99 >100	For reclamation plants only; in the amount required to close the facility
Utah	\$15,000 \$30,000 \$60,000	1000 – 3000 3,001 – 10,000 >10,000	Security covers drilling, plugging, water supply, replacement and restoration
Virginia	\$25,000 \$50,000 \$75,000 \$100,000	1 – 15 16 – 30 31 – 50 > 50	
West Virginia	\$50,000		
Wyoming	\$75,000		Additional amount may be required for dormant wells or pits; Agency requires bonding for some pits

Figure 14. Salvage Valuation

State	Valuation methodology	Anecdotal Information
Arkansas	Competitive bid by plugging contractors	Value of well site production equipment is used to offset plugging cost
California	Competitive bid by plugging contractors	Value of well site production equipment is used to offset plugging cost
Colorado	Competitive bid by plugging contractors	
Illinois	Current market value	Surface equipment value estimated only
Indiana	Competitive bid by resellers	State agency attempts to locate an interested operator to produce wells; Wells that cause environmental damages are plugged
Kansas	Sealed bid	Wells must be determined to have no economic value before state plugging. Proceeds from salvage are deposited in the Abandoned Well Plugging Fund (approx \$60,000/year)
Kentucky	Competitive bid by plugging contractors	
Louisiana	Competitive bid by plugging contractors	Bidders separately identify and place value on each piece of salvage equipment on a well-by-well basis
Michigan		Any funds from salvage are returned to the Orphan Well Fund. For the 2006 plugging season, the value of salvage was \$160,845.
Mississippi	Competitive bid by plugging contractors	
Nebraska		<p>Nebraska has typically not included the value in a cost estimate to plug a well. Contractors have been selected on the basis of their ability to do the required work and their price sheets and not a firm bid. Cost of abandonment is based on time worked. Wells are evaluated to determine a level of interest by other operators who may wish to bond and utilize the wells.</p> <p>The companies performing the plugging work have sold the equipment and retained 10% of the sales price. The remaining 90% of the value has been credited back on the final invoice for the plugging of the wells.</p>
North Dakota	Current market value	
Ohio	Current market value	ORC 1509.072 states that this has to be done. Rarely, is there any equipment or asset value. Salvage value is deducted from the contract price by plugging contractor.
Oklahoma	Competitive bid by plugging contractors	
Utah	Current market value	A full procedure and cost analysis is prepared for each well prior to bidding out the projects. Aside from a brief review of production history, reserves are not fully estimated. However, operators in the vicinity are notified that the well is going to be plugged and have the option to take over the well. Salvage value, if any is included in the cost analysis and would be considered as part of a responsible bid.

STATE SUMMARIES

STATE SUMMARY INTRODUCTION

States have statutory authorities and regulatory mechanisms to address orphan wells. While the IOGCC provided a definition for “orphan well” for purposes of this study, state definitions vary and are included in this category. Some states differentiate between abandoned and orphaned wells, and those definitions are also reflected in this category. Also included, is the specific information from the individual states concerning the date of establishment of the state regulatory program, the authorities used to regulate abandoned, idle, and orphan wells, statutory or regulatory definitions, and changes or improvements in programs. A synopsis of state authorities and definitions is included in Appendices A through FF.

Over the course of the four survey periods, some elements begin to emerge as points of note. In the first survey year, 1992, only 17 states reported any plugging activity. Texas reported plugging 5,402 wells, followed by Ohio at 1,127 and Kansas with 1,060. Kentucky reported plugging 432 and Oklahoma, 292. The rest of the numbers reported were less than 50 and most below 30. Waiting lists were obviously random in most cases and the average costs to plug were reported at a high for Montana of \$80,000 and a low for Arkansas of \$833, with most reporting within the range of 16,000 to 27,000. By the second survey period reported in 1996, 22 states reported plugging activity and the leaders in volume remained the same. The waiting lists were clearly becoming more defined, with eight states reporting zero, six reporting 30 or less, six states reporting waiting lists numbering in the thousands and five in the hundreds. Generally costs to plug went up and began to show more diversity. The new leader in high costs was Colorado at \$125,038 (a standing record) and the low was Missouri at \$1,075. Most of the reporting states clustered into three cost ranges: \$2,000 to \$4,000, \$9,000 to \$17,000 and \$22,000 to \$25,000.

In the third reporting period, the study of 1999 showed that only four states reported no plugging activity. Texas and Kansas remained the first and second leader in plugging activity reporting 15,476 and 1,892 wells plugged respectively. Third place turned into a cluster of states: Oklahoma (1,455), Kentucky (1440), Ohio (1,372) and Illinois (1,038). Waiting lists also moved up in numbers with only six states reporting zero wells, five reporting 20 or less, nine reporting in the hundreds and five reporting in the thousands. That period’s leader in average plugging costs was New York at \$41,667 and the low was Missouri at \$949. Nine states reported costs in the range of \$2,000 to \$6,000, four states reported cost ranges of

\$13,000 to \$19,000 and five reported costs above \$22,000.

For this most current study period, only three states reported no plugging activity. Texas and Kansas retained their leadership positions, 10,910 and 4,542 respectively. Only two states clustered in the third position, Illinois at 3,200 and Kentucky at 3,043. The waiting lists, however, continued to develop with only two reporting no wells, ten states reported in the thousands and six reported in the hundreds. Michigan reported the high in average plugging costs at \$55,376, with Alaska a strong second at \$40,000. The low cost state was Tennessee at \$1,035. The ranges became somewhat more blurred with a defined clump reporting in the \$1,000 to \$5,000 range, but almost a steady progression from \$7,000 up to 28,000.

Appendix A: Alabama

Regulatory Authority

State Oil and Gas Board
PO Box 869999
Tuscaloosa, AL 35486-6999
www.ogb.state.al.us

Background

Regulation of oil and gas wells in Alabama began in 1945 through legislation establishing the State Oil and Gas Board. The act provided the authority to regulate oil and gas wells, protect ground water, and provide for plugging, abandonment, and bonding. State Oil and Gas Board regulations were promulgated effective Oct. 1, 1946, to regulate these activities. Section 917-6 of the Code of Alabama provides for regulation of oil and gas wells by requiring the “drilling, casing and plugging of wells to be done in such a manner as to prevent the escape of oil and gas out of one stratum to another,” and “to prevent the pollution of fresh water supplies by oil, gas or salt water.”

Alabama has established a Well Plugging Fund to collect and disburse fees for the purpose of plugging coalbed methane gas wells. The fund will be used when the failure to plug a well poses a threat to the environment or to the public health, safety or welfare.

State Plugging Efforts

Currently, Alabama does not have a plugging fund dedicated to orphan wells. State plugging funds are dedicated to plugging coalbed methane gas wells.

Sources of Plugging Funds

Fee Permit fee

Definitions

Abandoned Well

Alabama statutes define an abandoned well as one that has not been used for six consecutive months and cannot be operated, whether because it is a dry hole or production has ceased, or operations have not been conducted, or for other reasons.

Orphan Well

Alabama does not statutorily define an orphan well, per se, but addresses abandoned wells.

Temporarily Abandoned Well

A temporarily abandoned well is statutorily defined as a well currently not producing oil and/or gas that has been approved for future utility by the state supervisor.

Blanket Bonds

	Amount	Add'l Criteria	Number of Wells
Base	\$100,00		

Single Well Securities

	Amount	Add'l Criteria	Depth
Maximum	\$50,000		
Minimum	\$5,000		

Statutory Authorities

Plugging Fund

Coalbed Methane Gas Plugging Fund: Ala. Code § 9-17-133

Authority to Regulate

Ala. Code 1975 § 9-17-6

Definitions

Alabama Oil & Gas Regulations § 400-1-1-05

Security or Financial Assurance

Date Security First Required:	1945
Modified Since 2000 Survey	<input type="checkbox"/>
Regulatory Authority Adjustment	<input checked="" type="checkbox"/>
Separate Site Restoration Bond	<input type="checkbox"/>

Types of Security Bonds Allowed

CD	<input type="checkbox"/>
Cash	<input type="checkbox"/>
Certificate of Insurance	<input type="checkbox"/>
Consolidated Financial Fund	<input type="checkbox"/>
Escrow Account	<input type="checkbox"/>
Financial Statements	<input type="checkbox"/>
Letter of Credit	<input type="checkbox"/>
Liens	<input type="checkbox"/>
Security Interest	<input type="checkbox"/>
Surety and/or Performance Bonds	<input checked="" type="checkbox"/>

Appendix B: Alaska

Regulatory Authority

Alaska Oil & Gas Commission
333 West Seventh Avenue, Suite 100
Anchorage, AK 99501-3935
www.state.ak.us/local/

Background

The Alaska Oil and Gas Conservation Commission began its regulation of oil and gas wells on Oct. 1, 1958. AS 31.05.030 describes the commission's authority to regulate oil and gas wells in the state. Plugging and abandonment regulations began in 1958 and were revised in 1986 and 1999. Ground water protection began generally in 1958. Authority to take primacy under the Safe Drinking Water Act began in 1984 and was revised in 1986 and 1999.

State Plugging Efforts

Sources of Plugging Funds

Public Operating budget

Definitions

Abandoned Well

An abandoned well is defined as a well plugged in accordance with 20 AAC 25.112, which dictates the setting of subsurface and surface plugs.

Temporarily Abandoned Well

Alaska does not use the term temporarily abandoned well, but rather uses the terms "suspended" and "shut-in" in the state's regulations. In Alaska, a suspended well is a well plugged in accordance with 20 AAC 25.110 with a reserved option to re-enter and re-drill the well or complete the well. A shut-in well is defined as a well where the surface, wellhead, or subsurface valves have been closed to halt flow from or into the well, with the completion interval remaining open to the tubing below the closed valves.

Blanket Bonds

	Amount	Add'l Criteria	Number of Wells
Minimum	\$200,000		

Single Well Securities

	Amount	Add'l Criteria	Depth
Maximum	\$100,000	Single well bonds allowed for estimated cost of P & A if less than \$100,000	

Statutory Authorities

Abandoned Wells

20 AAC 25.105 and 20 AAC 25.112

Authority to Regulate

Alaska Statute Title 31 Chap 5 §31.05.030

Security or Financial Assurance

Date Security First Required:	1958
Modified Since 2000 Survey	<input type="checkbox"/>
Regulatory Authority Adjustment	<input checked="" type="checkbox"/>
Separate Site Restoration Bond	<input checked="" type="checkbox"/>

Types of Security Bonds Allowed

CD	<input checked="" type="checkbox"/>
Cash	<input type="checkbox"/>
Certificate of Insurance	<input type="checkbox"/>
Consolidated Financial Fund	<input type="checkbox"/>
Escrow Account	<input type="checkbox"/>
Financial Statements	<input type="checkbox"/>
Letter of Credit	<input checked="" type="checkbox"/>
Liens	<input type="checkbox"/>
Security Interest	<input type="checkbox"/>
Surety and/or Performance Bonds	<input checked="" type="checkbox"/>

Appendix C: Arizona

Regulatory Authority

Arizona Geological Survey
416 West Congress Street, Suite 100
Tucson, AZ 85701
www.azgs.state.az.us

Background

The Arizona Oil and Gas Conservation Commission was established in 1959 to administer the Conservation Act of 1951, which was expanded in 1978 to include regulation of enhanced recovery, disposal and storage wells. As of July 1991, the Arizona Geological Survey provides staff support to the commission to administer and enforce the laws relating to the conservation of oil and gas. Rules promulgated pursuant to statutory authority are reviewed every five years and new rules are adopted, outdated rules repealed, and existing rules amended as necessary to be consistent with applicable federal law, and to account for technological advances and currently accepted practices in the regulated industry. In 1995, Arizona amended its laws to allow the commission to forfeit the bond of owners who fail to properly plug each dry or abandoned well and to sue them for plugging costs in excess of the bond amount. The Arizona Department of Water Resources has authority over water wells, and the Arizona Department of Environmental Quality has authority over Class I, III, IV, and V injection wells.

State Plugging Efforts

Arizona has no orphan wells, and therefore has no need for plugging efforts relative to such wells.

Definitions

Abandoned Well

An abandoned well is defined as one that is not producing, injecting, or plugged and is not capable of being put to some future beneficial use.

Temporarily Abandoned Well

Arizona defines a temporarily abandoned well as a well that is not producing, injecting, or plugged but might be capable of being put to some future beneficial use.

Blanket Bonds

	<i>Amount</i>	<i>Add'l Criteria</i>	<i>Number of Well</i>
Minimum	\$25,000		10
Mid	\$50,000		10 - 50
Maximum	\$250,00		> 50

Single Well Securities

	<i>Amount</i>	<i>Add'l Criteria</i>	<i>Depth</i>
Maximum	\$20,000	> 10,000	
Minimum	\$10,000	< 10,000	
Can be required on state leases			

Statutory Authorities

Plugging Oil and Gas Wells

27-524(E), and 27-516 (A)(3)

Authority to Regulate

27-515, and 27-516

Security or Financial Assurance

Date Security First Required:	1959
Modified Since 2000 Survey	<input type="checkbox"/>
Regulatory Authority Adjustment	<input checked="" type="checkbox"/>
Separate Site Restoration Bond	<input checked="" type="checkbox"/>

Types of Security Bonds Allowed

CD	<input checked="" type="checkbox"/>
Cash	<input checked="" type="checkbox"/>
Certificate of Insurance	<input type="checkbox"/>
Consolidated Financial Fund	<input type="checkbox"/>
Escrow Account	<input type="checkbox"/>
Financial Statements	<input type="checkbox"/>
Letter of Credit	<input type="checkbox"/>
Liens	<input type="checkbox"/>
Security Interest	<input type="checkbox"/>
Surety and/or Performance Bonds	<input checked="" type="checkbox"/>

Appendix D: Arkansas

Regulatory Authority

Oil & Gas Commission
301 Natural Resources Drive, Suite 102
Little Rock, AR 72205
www.aogc.state.ar.us

Background

Arkansas began regulating oil and gas wells in 1939. Required plugging and abandonment procedures were also enacted in 1939, as were efforts for the protection of ground water. The Arkansas Oil and Gas Commission is the state office responsible for enforcing the regulations. A significant revision to the regulations was adopted in 1983 to include bonding or a letter of credit for security purposes. In 1995, the state reduced its bonding.

State Plugging Efforts

The Arkansas Abandoned and Orphan Well Plugging Fund was created by statute in 2005. The fund is funded by an annual well fee assessed to operators or wells in the state. The fee generates approximately \$250,000 annually. Prior to the establishment of the plugging fund, abandoned and orphan wells were plugged utilizing funds from the commission operating budget.

Sources of Plugging Funds

Fee Annual operating fee

Definitions

Abandoned Well

Arkansas defines an abandoned well as any well that is not producing, has not received regulatory approval to remain idle or temporarily abandoned and has an unknown or insolvent operator.

Temporarily Abandoned Well

A temporarily abandoned well is a well that has been shut-in due to well bore problems or economic reasons, but has not been plugged.

Blanket Bonds

	Amount	Add'l Criteria	Number of Well
Minimum	\$25,000	< 50	
Mid	\$50,000	51 - 99	
Maximum	\$100,00	> 100	

Single Well Securities

	Amount	Add'l Criteria	Depth
Maximum	\$15,000		
Minimum	\$3,000		

Statutory Authorities

Plugging Fund

Ark. Stat. Ann. § 15-71-115 (2007)

Authority to Regulate

Ark. Stat. Ann. § 15-71-110 (2007), § 15-72-217

Security or Financial Assurance

Date Security First Required:	1983
Modified Since 2000 Survey	<input type="checkbox"/>
Regulatory Authority Adjustment	<input checked="" type="checkbox"/>
Separate Site Restoration Bond	<input type="checkbox"/>

Types of Security Bonds Allowed

CD	<input checked="" type="checkbox"/>
Cash	<input checked="" type="checkbox"/>
Certificate of Insurance	<input type="checkbox"/>
Consolidated Financial Fund	<input type="checkbox"/>
Escrow Account	<input type="checkbox"/>
Financial Statements	<input type="checkbox"/>
Letter of Credit	<input checked="" type="checkbox"/>
Liens	<input type="checkbox"/>
Security Interest	<input type="checkbox"/>
Surety and/or Performance Bonds	<input checked="" type="checkbox"/>

Appendix E: California

Regulatory Authority

Department of Conservation
801 K. Street MS 20-20
Sacramento, CA 95814
www.consrv.ca.gov/DOG

Background

California began its regulatory program in 1915, which included plugging and abandonment procedures. A ground water protection component was added in 1929. Two years later, the first well-bonding requirements were established. Revisions to update/enhance the statutes and regulations have occurred throughout the history of the program. The California Division of Oil, Gas, and Geothermal Resources is responsible for its maintenance.

State Plugging Efforts

California made major changes to its bonding statutes on Jan. 1, 1999. For individual well bonds, each amount was increased by \$5,000. Amounts are based on depths and come in three increments: wells < 5,000' = \$15,000; wells > 5,000' but <10,000' = \$20,000; and wells >10,000' = \$30,000. Blanket bonds are: \$1 million "super" blanket bond covers all wells, including idle wells; \$250,000 covers more than 50 wells, but not idle wells; and \$100,000 covers 50 or fewer wells, but not idle wells.

Regarding orphan wells, the state has an innovative orphan well adoption program, which allows for an opportunity to bring wells back into production. The division maintains a list of orphan wells that are available for adoption. This program allows prospective operators to enter into a three-way agreement to test an orphan well for up to 90 days without incurring any liability for plugging the well. If the test is successful, the prospective operator can adopt the well by posting a bond and becoming its permanent operator. If the test is unsuccessful, the prospective operator can walk away from the agreement with no liability incurred.

Sources of Plugging Funds

Fee	Idle well fee
Tax	Production assessment

Definitions

Abandoned Well

The state defines an abandoned well as one properly plugged, with the site location restored, and all reports filed.

Orphan Well

In California, an orphan well is defined as a well that has been deserted and has no viable operator or owner. California uses the term "idle-deserted" to define a well with no operator responsible for its plugging and abandonment. California also defines an "acute orphan well" as a well that could pose an immediate danger to life, health, or natural resources, but with no viable operator responsible for plugging and abandoning the well.

Blanket Bonds

	Amount	Add'l Criteria	Number of Well
Minimum	\$100,00	< 50	
Mid	\$250,00	> 50	
Maximum	\$1,000,0	All wells	

Single Well Securities

	Amount	Add'l Criteria	Depth
Maximum	\$30,000	> 10,000	
Mid	\$20,000	5,001 - 10,000	
Minimum	\$15,000	< 5,000	

Statutory Authorities

Authority to Regulate

Public Resources Code
(PRC) 3106, 3237, 3250, 3260, and 3263]; Idle Deserted Wells – [PRC 3237 and 3251]

Security or Financial Assurance

Date Security First Required:	1931
Modified Since 2000 Survey	<input type="checkbox"/>
Regulatory Authority Adjustment	<input type="checkbox"/>
Separate Site Restoration Bond	<input type="checkbox"/>

Types of Security Bonds Allowed

CD	<input checked="" type="checkbox"/>
Cash	<input checked="" type="checkbox"/>
Certificate of Insurance	<input type="checkbox"/>
Consolidated Financial Fund	<input type="checkbox"/>
Escrow Account	<input type="checkbox"/>
Financial Statements	<input type="checkbox"/>
Letter of Credit	<input type="checkbox"/>
Liens	<input type="checkbox"/>
Security Interest	<input type="checkbox"/>
Surety and/or Performance Bonds	<input checked="" type="checkbox"/>

Appendix F: Colorado

Regulatory Authority

Oil & Gas Conservation Commission
1120 Lincoln Street, Suite 801
Denver, CO 80203-2136
www.oil-gas.state.co.us

Background

The Colorado Oil and Gas Conservation Commission (COGCC) began regulating oil and gas wells in 1951. Regulation of ground water protection and plugging and abandonment procedures also began that year. The commission has the authority to regulate the drilling, production and plugging of oil and gas related wells and all other operations for the production of oil or gas. COGCC also controls the shooting and chemical treatment of wells, well spacing, and all oil and gas operations to prevent and mitigate significant adverse environmental impacts on any air, water, soil or biological resources resulting from oil and gas operations to the extent necessary to protect public health, safety, and welfare; taking into consideration cost-effectiveness and technical feasibility.

In 1989, an amendment to the Water Quality Control Act designated the COGCC as an implementing agency for ground water standards and classifications. In 1994, legislation required the commission to balance promotion of oil and gas development with the protection of public health, safety and welfare. This legislation also expanded the types of financial surety accepted. In 1995, the commission began requiring mechanical integrity testing on any well idle for more than two years.

State Plugging Efforts

Colorado's source of plugging comes from a mill levy imposed on the market value of all oil and gas produced, saved, sold or transported from the field. The COGCC receives an annual appropriation of \$220,000 that is dedicated to plugging and reclaiming orphaned wells out of these funds. The uncommitted balance of this fund could be appropriated to plug additional wells or respond to emergencies.

Sources of Plugging Funds

Tax Excise tax

Definitions

Abandoned Well

An abandoned well is a well that is properly abandoned per COGCC specifications outlined in COGCC Rule 319 a.

Orphan Well

An orphaned well is defined as a well where no operator can be located. An inactive well (for financial assurance

purposes) is defined as any well from which no production has been sold for a period of 12 consecutive months; any well that has been temporarily abandoned for a period of six consecutive months; or any injection well which has not been utilized.

Temporarily Abandoned Well

A temporarily abandoned well is incapable of production or injection without the addition of one or more pieces of wellhead or other equipment, including: valves, tubing, rods, pumps, heater-treaters, separators, dehydrators, compressors, piping, or tanks.

Blanket Bonds

	Amount	Add'l Criteria	Number of Well
Minimum	\$30,000	< 100	
Maximum	\$100,000	> 100	
Other	\$25,000	Surface	Blanket
Other	\$5,000	Surface	Irrigated land
Other	\$2,000	Surface	Non-irrigated

Single Well Securities

	Amount	Add'l Criteria	Depth
Base	\$5,000		

Statutory Authorities

Plugging Fund

C.R.S. 34-60-122

Authority to Regulate

C.R.S. 34-60-106 (2)]; Abandonment – [Rule 319 a]

Security or Financial Assurance

Date Security First Required:	1951
Modified Since 2000 Survey	<input type="checkbox"/>
Regulatory Authority Adjustment	<input checked="" type="checkbox"/>
Separate Site Restoration Bond	<input checked="" type="checkbox"/>

Types of Security Bonds Allowed

CD	<input checked="" type="checkbox"/>
Cash	<input checked="" type="checkbox"/>
Certificate of Insurance	<input checked="" type="checkbox"/>
Consolidated Financial Fund	<input checked="" type="checkbox"/>
Escrow Account	<input checked="" type="checkbox"/>
Financial Statements	<input checked="" type="checkbox"/>
Letter of Credit	<input type="checkbox"/>
Liens	<input type="checkbox"/>
Security Interest	<input checked="" type="checkbox"/>
Surety and/or Performance Bonds	<input checked="" type="checkbox"/>

Appendix G: Florida

Regulatory Authority

Department of Environmental Protection
903 West Tennessee Street, MS 720
Tallahassee, FL 32304-7700
www.dep.state.fl.us/geology

Background

Florida began regulation of oil and gas wells in 1945 and has made revisions to its regulations in 1962, 1972, 1981, 1989 and 1993. Ground water protection and plugging and abandonment procedures began in 1946. The Florida Geological Survey has responsibility for regulation of oil and gas wells in the state.

State Plugging Efforts

Florida has established a Minerals Trust Fund to assist in plugging of abandoned wells. These funds are intended for use when the operator cannot or will not correct the violations within a reasonable time.

Definitions

Abandoned Well

An abandoned well is one that has been permanently plugged and forsaken.

Temporarily Abandoned Well

In Florida, temporarily abandoned wells are those with existing perforations plugged that could be re-entered.

Blanket Bonds

	<i>Amount</i>	<i>Add'l Criteria</i>	<i>Number of Well</i>
Base	\$1,000,0	10	

Single Well Securities

<i>Amount</i>	<i>Add'l Criteria</i>	<i>Depth</i>
Maximum	\$100,000	\$200,000 / producer
Base	\$50,000	\$100,000 / producer

Statutory Authorities

Plugging Fund

Minerals Trust Fund: Florida Statutes, Chapter 376.40

Authority to Regulate

Florida Statutes, Chapter 377, Part I, Florida Administrative Code, Rule 62C-26.008, F.S.A. § 376.40

Security or Financial Assurance

Date Security First Required:	1946
Modified Since 2000 Survey	<input checked="" type="checkbox"/>
Regulatory Authority Adjustment	<input checked="" type="checkbox"/>
Separate Site Restoration Bond	<input type="checkbox"/>

Types of Security Bonds Allowed

CD	<input checked="" type="checkbox"/>
Cash	<input checked="" type="checkbox"/>
Certificate of Insurance	<input type="checkbox"/>
Consolidated Financial Fund	<input type="checkbox"/>
Escrow Account	<input checked="" type="checkbox"/>
Financial Statements	<input type="checkbox"/>
Letter of Credit	<input type="checkbox"/>
Liens	<input type="checkbox"/>
Security Interest	<input type="checkbox"/>
Surety and/or Performance Bonds	<input checked="" type="checkbox"/>

Appendix H: Illinois

Regulatory Authority

Department of Natural Resources
One Natural Resources Way
Springfield, IL 67206
www.dnr.state.il.us/mines/dog

Background

The Illinois Oil and Gas Act was adopted in 1939. It provides the Department of Natural Resources, Division of Oil and Gas in the Office of Mines and Minerals with the authority to define and regulate idle, orphan and temporarily abandoned wells. While the measure generally specified the protection of ground water, specific surface casing requirements were not mandated until 1984. Plugging requirements, which have been modified since the adoption of the law, have been in place since its passage in 1939.

No significant revision occurred until 1988, when authority for the regulation of oil and gas wells was removed from the State Mining Board and given to the director of the Department of Mines and Minerals (part of the Illinois Department of Natural Resources), effective July 1, 1995. In 1989, the Division of Oil and Gas was given enforcement authority in the form of administrative orders, including the issuance of civil penalties for violations. Bonding requirements for wells were eliminated in 1990 and replaced with an annual well fee, thus creating the State Plugging and Restoration Program. In 1997, the act was amended to create the Landowner Grant Program to plug abandoned wells and to establish salvage procedures for abandoned production equipment. The department uses this program to offset plugging costs. Over the last nine years, the oil and gas rules have undergone 24 amendments, including: revision of temporary abandonment; plugging and mechanical integrity testing rules for Class II wells; revision of permitting requirements of production wells and Class II Injection wells and revised rules for the operation and construction of production and Class II wells; rules addressing the handling, transportation, and disposal of exploration and production (E&P) waste; and the elimination of produced water pits.

In accordance with the oil and gas rules, all idle wells must be reported to the department and put on temporary abandoned status if they have been idle for more than two years. Operators, which do not report idle wells to the department, are issued a notice of violation for failure to request temporary abandoned status. If the well is not

granted temporarily abandoned status, the well is ordered plugged. If no operator for the well can be located, after notice and hearing, the unit is placed into the State Plugging and Restoration Program.

State Plugging Efforts

Statutes in Illinois require the department to annually publish a financial report describing the income, expenditures, and obligations of the Underground Resources Conservation Enforcement Fund and the Plugging and Restoration Fund, including the number of orphan wells identified and the status of closure of these wells.

In the case of orphan wells, the State of Illinois files a lien for all fees due and for all funds expended by the department to plug, replug, repair or restore the site of the orphan well. The lien extends to the entire owners' and operators' interest in the well and to all equipment used in connection with the operating of the well, as well as to the entire acreage included in the drilling unit or units. The lien created in the case of an orphan well is prior and superior to any mortgage or other lien except for the lien of local property taxes.

The department may elect to plug, replug, repair, or restore the well site of any orphan well, but only after a determination by the department, in accordance with its rules, that the well is orphaned. In cases where no permittee can be identified or located and no contributions have been made to the fund attributable to the operation of the well, expenditures are limited to amounts attributable to the fund's interest earnings or from amounts in the fund other than permittee contributions, unless those amounts are otherwise restricted.

Sources of Plugging Funds

Fee Annual operating fee

Definitions

Orphan Well

Illinois defines a well as orphan if its bond has not been paid for the past two years, no oil or gas has been produced in two years, and no owner can be identified by the state. A well that has been drilled for purposes other than those for which a permit is required can also be considered an orphan

well if it serves as a conduit for oil or salt water intrusions into fresh water zones or onto the surface.

Temporarily Abandoned Well

A temporarily abandoned well is a well that has been inactive for more than two years and has been temporarily abandoned in accordance with state rules.

Blanket Bonds

	<i>Amount</i>	<i>Add'l Criteria</i>	<i>Number of Well</i>
Minimum	\$25,000	< 25	
Mid	\$50,000	26 – 50	
Maximum	\$100,00	> 50	

Single Well Securities

	<i>Amount</i>	<i>Add'l Criteria</i>	<i>Depth</i>
Maximum	\$3,000		> 2,000
Base	\$1,500		< 2,000

Statutory Authorities

Plugging Oil and Gas Wells

Orphan Well Plugging: 225 ILCS 725/1.2; 19.5; 19.6; 19.8

Definitions

225 ILCS 725/1

Authority to Regulate

225 ILCS 725/1, 225 ILCS 725/1

Security or Financial Assurance

Date Security First Required:	1939
Modified Since 2000 Survey	<input type="checkbox"/>
Regulatory Authority Adjustment	<input checked="" type="checkbox"/>
Separate Site Restoration Bond	<input type="checkbox"/>

Types of Security Bonds Allowed

CD	<input checked="" type="checkbox"/>
Cash	<input type="checkbox"/>
Certificate of Insurance	<input type="checkbox"/>
Consolidated Financial Fund	<input type="checkbox"/>
Escrow Account	<input type="checkbox"/>
Financial Statements	<input checked="" type="checkbox"/>
Letter of Credit	<input type="checkbox"/>
Liens	<input type="checkbox"/>
Security Interest	<input type="checkbox"/>
Surety and/or Performance Bonds	<input checked="" type="checkbox"/>

Appendix I: Indiana

Regulatory Authority

Department of Natural Resources
402 West Washington Street Room 293
Indianapolis, IN 46204
www.in.gov/dnr/dnroi

Background

Regulation of oil and gas wells began in 1947 under the responsibility of the Indiana Department of Natural Resources, Division of Oil and Gas. Statutes provide for placing a well in temporary abandoned status, enabling the DNR to require (after five years) that wells demonstrate mechanical integrity, or be plugged or recased. Significant revisions were made in 1985 in the bonding and UIC programs. In 1999, a new rule was promulgated which provided for alternate tests for verifying the integrity of temporarily abandoned wells. The rule also allowed the DNR to consider future value of wells in granting a second term of temporary abandonment.

State Plugging Efforts

Indiana's primary source of funding for their plugging fund comes from an annual fee paid by operators for each of their producing wells (approximately \$230,000 per year) and civil penalties (approximately \$30,000-\$50,000 per year). Indiana always searches for an interested operator to produce wells when possible, but immediately plug wells that cause environmental damages.

Sources of Plugging Funds

Fee	Annual operating fee
Fine	Civil penalties

Definitions

Abandoned Well

Abandoned well is defined as one that has been permanently plugged.

Orphan Well

Indiana defines orphan wells as units that are not producing and for which no financially responsible party exists.

Temporarily Abandoned Well

Indiana officially defines a temporarily abandoned well as a well that has approval not to produce oil or natural gas and to delay plugging.

Blanket Bonds

	Amount	Add'l Criteria	Number of Well
Base	\$45,000		

Single Well Securities

	Amount	Add'l Criteria	Depth
Base	\$2,500		

Statutory Authorities

Authority to Regulate

Plugging and Abandonment: IC 14-37-8-1

Authority to Regulate

IC 14-37-7

Security or Financial Assurance

Date Security First Required:	1939
Modified Since 2000 Survey	<input checked="" type="checkbox"/>
Regulatory Authority Adjustment	<input type="checkbox"/>
Separate Site Restoration Bond	<input type="checkbox"/>

Types of Security Bonds Allowed

CD	<input checked="" type="checkbox"/>
Cash	<input checked="" type="checkbox"/>
Certificate of Insurance	<input type="checkbox"/>
Consolidated Financial Fund	<input type="checkbox"/>
Escrow Account	<input type="checkbox"/>
Financial Statements	<input type="checkbox"/>
Letter of Credit	<input type="checkbox"/>
Liens	<input type="checkbox"/>
Security Interest	<input type="checkbox"/>
Surety and/or Performance Bonds	<input checked="" type="checkbox"/>

Appendix J: Kansas

Regulatory Authority

Kansas Corporation Commission
130 South Market Street, Room 2078
Wichita, KS 67202
www.kcc.state.ks.us

Background

Kansas had plugging authority in place in 1933. However, for practical purposes, regulation of oil and gas wells by the Kansas Corporation Commission began in 1935. Ground water protection regulations that related to injection wells or ponds were in place in 1935 and enforced by the Kansas Department of Health and Environment through 1986, and by the Kansas Corporation Commission (KCC) since that date. Plugging and abandonment procedures were also in place in 1935, but were revised and expanded in 1982. An abandoned well database was begun in 1995. As part of that development, a protocol was established by which abandoned wells are categorized according to their threat to the environment and/or public safety. In 1996, financial assurance requirements were authorized and went into effect on Jan. 1, 1998. The Corporation Commission has the statutory authority, under Chapter 55 of the Kansas Statutes, to cause operators to plug abandoned wells and to remediate or repair abandoned wells prior to plugging. The commission can direct an order to plug an abandoned well toward any party that has had physical control of the well during its existence.

On Feb. 4, 1999, in response to low oil prices and the large numbers of temporarily abandoned wells, the KCC issued a special declaratory order clarifying and focusing filing requirements for such wells. The order excluded from the temporary abandonment application filing process wells that met the following criteria: A) Fully equipped for production of oil or gas, or injection; B) Capable of immediately resuming production of oil or gas, or injection; C) Subject to a valid, continuing oil and gas lease; D) Shut in for less than 365 consecutive days; E) Otherwise in full compliance with all rules and regulations.

State Plugging Efforts

The Abandoned Well Plugging Fund is funded through many different resources including the State General Fund, State Water Plan, federal mineral royalties, KCC

Conservation Fund, salvaged equipment from abandoned well sites and interest. Salvaged equipment from plugging projects is sold through sealed bid processes. Proceeds from salvaged equipment are approximately \$60,000 per year.

Sources of Plugging Funds

Fee	Permit fee
Tax	Production assessment

Definitions

Abandoned Well

An abandoned well is any well that has not been properly plugged and where there is no identifiable owner / licensed operator responsible for the care and control of the well.

Temporarily Abandoned Well

A temporarily abandoned well is one which has been inactive for more than 90 days and which is forsaken for the time being by the operator of record. Such wells are eligible for temporary abandonment status upon the filing of an application with the commission.

Blanket Bonds

	Amount	Add'l Criteria	Number of Well
Minimum	\$15,000	Varies	
Maximum	\$45,000	Varies	

Single Well Securities

	Amount	Add'l Criteria	Depth
Base	\$1	Multiplied times the aggregate depth for all wells	

Statutory Authorities

Plugging Oil and Gas Wells

Chapter 55-166

Authority to Regulate

Chapter 55

Security or Financial Assurance

Date Security First Required:	1982
Modified Since 2000 Survey	<input checked="" type="checkbox"/>
Regulatory Authority Adjustment	<input type="checkbox"/>
Separate Site Restoration Bond	<input type="checkbox"/>

Types of Security Bonds Allowed

CD	<input type="checkbox"/>
Cash	<input checked="" type="checkbox"/>
Consolidated Financial Fund	<input type="checkbox"/>
Certificate of Insurance	<input type="checkbox"/>
Escrow Account	<input type="checkbox"/>
Financial Statements	<input checked="" type="checkbox"/>
Letter of Credit	<input checked="" type="checkbox"/>
Liens	<input checked="" type="checkbox"/>
Security Interest	<input type="checkbox"/>
Surety and/or Performance Bonds	<input checked="" type="checkbox"/>

Appendix K: Kentucky

Regulatory Authority

Department of Natural Resources
PO Box 2244
Frankfort, KY 40602-2244
www.dogc.ky.gov

Background

Regulation of oil and gas wells began in 1960, and the Kentucky Revised Statutes provide the Department of Mines and Minerals, Division of Oil and Gas, the authority to require wells to be drilled, cased, and plugged in a manner to prevent waste, blowouts, cave-ins, seepages, and fires, and to protect correlative rights. Ground water protection regulations began in 1978 through an administrative regulation for protection of freshwater zones. Regulation of plugging and abandonment procedures began in 1961, including regulations for wells drilled through both noncoal-bearing strata and coal-bearing strata. Bonding requirements and penalty provisions were established in 1966 and increased in 1990.

State Plugging Efforts

Sources of Plugging Funds

Revenue Forfeited bonds

Definitions

Abandoned Well

An improperly abandoned well is defined as a well that is neither producing nor plugged.

Temporarily Abandoned Well

A temporarily abandoned well is defined as a well shut down for good cause as determined by the state.

Statutory Authorities

Authority to Regulate

Idle Wells: Kentucky Revised Statutes, Chapter 353.510, 353.550, 353.560

Security or Financial Assurance

Date Security First Required:
 Modified Since 2000 Survey
 Regulatory Authority Adjustment
 Separate Site Restoration Bond

Types of Security Bonds Allowed

CD	<input type="checkbox"/>
Cash	<input type="checkbox"/>
Consolidated Financial Fund	<input type="checkbox"/>
Certificate of Insurance	<input type="checkbox"/>
Escrow Account	<input type="checkbox"/>
Financial Statements	<input type="checkbox"/>
Letter of Credit	<input type="checkbox"/>
Liens	<input type="checkbox"/>
Security Interest	<input type="checkbox"/>
Surety and/or Performance Bonds	<input type="checkbox"/>

Appendix L: Louisiana

Regulatory Authority

Department of Natural Resources
PO Box 94275
Baton Rouge, LA 70804-9275
www.dnr.state.la.us/cons/consrv.ssi

Background

Act 127, passed in 1912, gave the Louisiana Commission for the Conservation of Natural Resources (which became the Louisiana Department of Conservation in 1916) the authority to regulate the plugging of abandoned wells. In 1924, Act 133 made it illegal to pollute the waterways with salt water, oil and other substances. In 1940, Act 157 was adopted as Title 30 of the Revised Statutes of 1950. Statewide Order No. 29-B passed in 1943, and saltwater disposal well regulations were added in 1961 and amended in 1982 to include federally mandated language under the EPA-approved UIC program. The first commercial facility regulations became law in 1980, and six years later the first oil field pit rules were added.

Regulation of orphan wells is carried out by the Louisiana Department of Natural Resources, Office of Conservation. The Office of Conservation rules are contained in Title 43 of the Louisiana Administrative Code. Statewide order 29-B is currently under review and revision.

State Plugging Efforts

If the responsible party is unable to complete site restoration, and the assistant-secretary declares the site to be orphaned, the Oilfield Site Restoration Fund contributes the balance of the restoration costs for the site.

Sources of Plugging Funds

Tax Production assessment

Definitions

Abandoned Well

An abandoned well is defined as a unit whose use has been permanently discontinued or which is in a state of disrepair such that it cannot be used for its intended purpose or for observation purposes.

Orphan Well

Orphan wells are defined as wells which have been abandoned and require cleanup activities. Wells not in compliance with applicable laws and regulations may also be found to be "orphaned."

Blanket Bonds

	Amount	Add'l Criteria	Number of Well
Minimum	\$25,000		< 10
Mid	\$125,00		11 – 100
Maximum	\$250,00		> 100

Single Well Securities

	Amount	Add'l Criteria	Depth
Maximum	\$3	Per foot	> 10,000
Mid	\$2	Per foot	3,001 - 10,000
Base	\$1	Per foot	< 3,000

Statutory Authorities

Plugging Fund

Act 404 of 1993 as amended by Act 297 of 1995

Authority to Regulate

Idle Wells: LSA-R.S. 30:4 and Statewide Order No. 29-B § XIX

Security or Financial Assurance

Date Security First Required:	2000
Modified Since 2000 Survey	<input checked="" type="checkbox"/>
Regulatory Authority Adjustment	<input checked="" type="checkbox"/>
Separate Site Restoration Bond	<input type="checkbox"/>

Types of Security Bonds Allowed

CD	<input checked="" type="checkbox"/>
Cash	<input type="checkbox"/>
Certificate of Insurance	<input type="checkbox"/>
Consolidated Financial Fund	<input type="checkbox"/>
Escrow Account	<input type="checkbox"/>
Financial Statements	<input type="checkbox"/>
Letter of Credit	<input checked="" type="checkbox"/>
Liens	<input type="checkbox"/>
Security Interest	<input type="checkbox"/>
Surety and/or Performance Bonds	<input checked="" type="checkbox"/>

Appendix M: Maryland

Regulatory Authority

Maryland Department of the Environment
1800 Washington Boulevard
Baltimore, MD 21230
www.mde.state.md.us

Background

Maryland began regulation of oil and gas wells in 1954, but did not have regulations in place for ground water protection or plugging and abandonment procedures until 1991. The Mining Program, under the Maryland Department of the Environment, is responsible for the regulation of oil and gas wells.

State Plugging Efforts

No plugging fund/no orphan wells

Definitions

Abandoned Well

An abandoned well is defined as a well in which there has been failure of the permittee to perform in a manner set forth in the authorized drilling and operating permit and the reclamation plan, or upon revocation of the permit.

Blanket Bonds

	<i>Amount</i>	<i>Add'l Criteria</i>	<i>Number of Well</i>
Maximum	\$500,00		

Single Well Securities

	<i>Amount</i>	<i>Add'l Criteria</i>	<i>Depth</i>
Maximum	\$100,000		

Statutory Authorities

Authority to Regulate

Idle Wells: Environment Article §14-103 Code of Maryland
Regulations 08.10.01.06 B

Security or Financial Assurance

Date Security First Required:	1957
Modified Since 2000 Survey	<input type="checkbox"/>
Regulatory Authority Adjustment	<input type="checkbox"/>
Separate Site Restoration Bond	<input type="checkbox"/>

Types of Security Bonds Allowed

CD	<input checked="" type="checkbox"/>
Cash	<input checked="" type="checkbox"/>
Certificate of Insurance	<input type="checkbox"/>
Consolidated Financial Fund	<input type="checkbox"/>
Escrow Account	<input type="checkbox"/>
Financial Statements	<input type="checkbox"/>
Letter of Credit	<input checked="" type="checkbox"/>
Liens	<input type="checkbox"/>
Security Interest	<input type="checkbox"/>
Surety and/or Performance Bonds	<input checked="" type="checkbox"/>

Appendix N: Michigan

Regulatory Authority

Department of Environmental Quality
PO Box 30256
Lansing, MI 48909-7756
www.michigan.gov/deq

Background

Act No. 65 of the Michigan Legislature provided for the issuance of permits and regulation of drilling, and in 1927 created the Office of the Supervisor of Wells in the Geological Survey Division of the Department of Environmental Quality. Act 65 also required casing and sealing of each freshwater, brine, oil or gas formation. Plugging requirements also were introduced in 1927. Specific regulations concerning idle wells occurred in 1939, allowing the supervisor of wells to require the locating, drilling, deepening, redrilling, or casing reopening, sealing, operating, and plugging of wells drilled for oil or gas disposal, and to prevent pollution damage to freshwater, underground resources, neighboring properties, or rights to life. In 1994, Michigan passed legislation creating an orphan well fund for plugging, response activity, or site restoration of orphan oil or gas wells. Bond amounts were changed in 1996 to \$10,000–\$30,000 for an individual well; and \$100,000–\$250,000 blanket bond for multiple wells (up to 100).

State Plugging Efforts

Michigan has an Orphan Well Fund. The Fund supervisor must annually submit to the legislature a list of the oil or gas wells that should be plugged and those at which response activities or site restoration should be performed with money in the fund. The list is compiled in order of priority and accompanied by estimates of total project costs, including internal administration and emergency contingencies.

According to statute, the legislature annually appropriates money from the fund for projects on the prepared list, with priority for sites where there exists an imminent threat to public health and safety.

Sources of Plugging Funds

Tax Production assessment

Definitions

Abandoned Well

An abandoned oil or gas well is defined as a well that has not been plugged promptly after having been drilled as a dry hole, or has not been used for its intended purpose during 12 consecutive months without authorization.

Orphan Well

An orphan well is an abandoned or improperly closed well for which no owner or operator is known, or for which all owners or operators are insolvent. Michigan is able to use Orphan Well funds to correct conditions that are determined to be an imminent threat to public safety even if the well is not an orphan.

Temporarily Abandoned Well

A temporarily abandoned well is defined as a unit that has received permission from the Supervisor to remain unplugged for more than 12 consecutive months.

Blanket Bonds

	Amount	Add'l Criteria	Number of Well
Minimum	\$100,00		
Maximum	\$250,00		
One performance bond covers all wells			

Single Well Securities

	Amount	Add'l Criteria	Depth
Maximum	\$30,000		
Minimum	\$10,000		

Statutory Authorities

Plugging Fund

Orphan Well Fund: M.C.L.A. 324.61604

Authority to Regulate

Part 615

Security or Financial Assurance

Date Security First Required:	1957
Modified Since 2000 Survey	<input type="checkbox"/>
Regulatory Authority Adjustment	<input checked="" type="checkbox"/>
Separate Site Restoration Bond	<input type="checkbox"/>

Types of Security Bonds Allowed

CD	<input checked="" type="checkbox"/>
Cash	<input checked="" type="checkbox"/>
Certificate of Insurance	<input type="checkbox"/>
Consolidated Financial Fund	<input type="checkbox"/>
Escrow Account	<input type="checkbox"/>
Financial Statements	<input checked="" type="checkbox"/>
Letter of Credit	<input checked="" type="checkbox"/>
Liens	<input type="checkbox"/>
Security Interest	<input type="checkbox"/>
Surety and/or Performance Bonds	<input checked="" type="checkbox"/>

Appendix O: Mississippi

Regulatory Authority

Mississippi Oil & Gas Board
2257 Southwood Road
Jackson, MS 39211
www.ogb.state.ms.us

Background

Regulation of oil and gas wells in Mississippi began in 1948 with the establishment of the State Oil and Gas Board. § 53:1-17 of the Mississippi Code gives the board jurisdictional authority to enforce all laws relating to the conservation of oil and gas. Statewide rules were adopted in 1951, and the plugging rules, adopted in 1948 were revised in 1981. Ground water protection rules adopted in 1948 were revised in 1981 and 1989. Requirements for the financial responsibility of operators were established in 1992.

State Plugging Efforts

Mississippi provides funds to plug orphan wells only when the Oil and Gas Conservation Fund exceeds the fiscal year's estimated budget by at least \$200,000. The statute states that in the event that the Oil and Gas Conservation Fund contains an amount greater than the current fiscal year's estimated budget plus \$200,000, the amount of that excess may be used at the board's discretion, to plug any oil or gas well, including any Class II well which has been determined by the board to represent an eminent threat to the environment and which has been determined by the board to be an "orphan" well.

Sources of Plugging Funds

Fee Idle well fee

Definitions

Orphan Well

According to Mississippi's statutes, "orphan well" is any oil or gas well in the state, including Class II wells, which has not been properly plugged according to the requirements of the statutes, rules and regulations governing same and for which a responsible party, such as an owner or operator, cannot be located or for which, there is no other party which can be directed to plug the well.

Blanket Bonds

	Amount	Add'l Criteria	Number of Well
Base	\$100,00		

Single Well Securities

	Amount	Add'l Criteria	Depth
Maximum	\$50,000		> 20,000
Mid	\$30,000		16,001 - 20,0
Mid	\$15,000		10,001 - 16,0
Minimum	\$10,000		< 10,000

Statutory Authorities

Definitions

Mississippi Code §53-1-3

Plugging Fund

Oil and Gas Conservation Fund: Mississippi Code, § 53-1-77

Authority to Regulate

Mississippi Code, § 53-1-17

Security or Financial Assurance

Date Security First Required:	1992
Modified Since 2000 Survey	<input type="checkbox"/>
Regulatory Authority Adjustment	<input checked="" type="checkbox"/>
Separate Site Restoration Bond	<input type="checkbox"/>

Types of Security Bonds Allowed

CD	<input type="checkbox"/>
Cash	<input checked="" type="checkbox"/>
Certificate of Insurance	<input type="checkbox"/>
Consolidated Financial Fund	<input type="checkbox"/>
Escrow Account	<input type="checkbox"/>
Financial Statements	<input type="checkbox"/>
Letter of Credit	<input checked="" type="checkbox"/>
Liens	<input type="checkbox"/>
Security Interest	<input type="checkbox"/>
Surety and/or Performance Bonds	<input checked="" type="checkbox"/>

Appendix P: Missouri

Regulatory Authority

Department of Natural Resources
PO Box 250
Rolla, MO 65402
www.dnr.mo.gov/geology

Background

Missouri began regulating oil and gas wells in 1966. Statutes for ground water protection, plugging and abandonment, and bonding have been revised on several occasions. Regulation is accomplished through the Division of Geology and Land Survey under the Department of Natural Resources.

State Plugging Efforts

Missouri has an Oil and Gas Remedial Fund to help plug their orphan wells. All monies in the plugging fund are generated from forfeited bonds. Missouri also has a statute found in Chapter 259 declaring illegal oil, illegal gas, and illegal product to be contraband, and upon seizure and sale the proceeds shall be deposited into the fund.

Sources of Plugging Funds

Fine Civil penalties

Definitions

Abandoned Well

An abandoned well is defined as a unit with a permanent plug in accordance with the oil and gas regulations.

Orphan Well

Orphan wells are not statutorily defined in Missouri.

Temporarily Abandoned Well

A temporarily abandoned well is defined as a well which is not in operation for more than 90 days. Every two years, the well operator must demonstrate that a temporarily abandoned well is capable of production or plug the well.

Blanket Bonds

	<i>Amount</i>	<i>Add'l Criteria</i>	<i>Number of Well</i>
Minimum	\$20,000	(0 -800 ft)	< 50
Mid	\$30,000	(801 – 1,200)	< 15

Single Well Securities

	<i>Amount</i>	<i>Add'l Criteria</i>	<i>Depth</i>
Maximum	\$4,000	+ \$1 / per square foot	> 5,001
Mid	\$4,000		2,001 - 5000
Mid	\$3,000		1,001 - 2,000
Mid	\$2,000		501 - 1,000
Minimum	\$1,000		0 - 500

Statutory Authorities

Authority to Regulate

Missouri RSMo. Chapter 259

Security or Financial Assurance

Date Security First Required:	1966
Modified Since 2000 Survey	<input type="checkbox"/>
Regulatory Authority Adjustment	<input checked="" type="checkbox"/>
Separate Site Restoration Bond	<input type="checkbox"/>

Types of Security Bonds Allowed

CD	<input checked="" type="checkbox"/>
Cash	<input type="checkbox"/>
Certificate of Insurance	<input type="checkbox"/>
Consolidated Financial Fund	<input type="checkbox"/>
Escrow Account	<input type="checkbox"/>
Financial Statements	<input type="checkbox"/>
Letter of Credit	<input checked="" type="checkbox"/>
Liens	<input type="checkbox"/>
Security Interest	<input type="checkbox"/>
Surety and/or Performance Bonds	<input checked="" type="checkbox"/>

Appendix Q: Montana

Regulatory Authority

Board of Oil & Gas Conservation
2535 St. John's Avenue
Billings, MT 59102
www.bogc.dnrc.state.mt.us

Background

Regulation of oil and gas wells in Montana began in 1954. Bonding requirements were increased in 1993. Statutes give the Montana Board of Oil and Gas Conservation the authority to regulate the drilling, casing, and production and plugging of wells in a manner to prevent waste or pollution. This includes wells that are abandoned and the responsible party cannot be found. Montana has applied to EPA for primacy to regulate its Class II injection wells.

State Plugging Efforts

Montana's plugging funds come from the oil and gas production damage mitigation account that is statutorily appropriated in Title 82 of the Montana Code. Bond forfeitures are also used for well plugging.

Sources of Plugging Funds

Revenue	Forfeited bonds
Tax	Production assessment

Definitions

Abandoned Well

No definition is established for the term "abandoned well."

Orphan Well

No definition is established for the term "orphan well."

Temporarily Abandoned Well

No definition is established for the term "temporarily abandoned well."

Blanket Bonds

	Amount	Add'l Criteria	Number of Well
Base	\$50,000		

Single Well Securities

	Amount	Add'l Criteria	Depth
Maximum	\$10,000	> 3,500	
Mid	\$5,000	2,001 - 3,500	
Minimum	\$1,500	< 2,000	

Statutory Authorities

Plugging Fund

Oil and Gas Production Damage Mitigation Account: 82-11-161

Authority to Regulate

82-11-111

Security or Financial Assurance

Date Security First Required:	1954
Modified Since 2000 Survey	<input type="checkbox"/>
Regulatory Authority Adjustment	<input checked="" type="checkbox"/>
Separate Site Restoration Bond	<input type="checkbox"/>

Types of Security Bonds Allowed

CD	<input checked="" type="checkbox"/>
Cash	<input type="checkbox"/>
Certificate of Insurance	<input type="checkbox"/>
Consolidated Financial Fund	<input type="checkbox"/>
Escrow Account	<input type="checkbox"/>
Financial Statements	<input checked="" type="checkbox"/>
Letter of Credit	<input type="checkbox"/>
Liens	<input type="checkbox"/>
Security Interest	<input type="checkbox"/>
Surety and/or Performance Bonds	<input checked="" type="checkbox"/>

Appendix R: Nebraska

Regulatory Authority

Nebraska Oil & Gas Conservation
PO Box 399
Sidney, NE 69162
www.nogcc.ne.gov

Background

The Oil and Gas Conservation Act for the regulation of oil and gas was adopted Sep. 28, 1959. However, the first regulations that gave authority to the Nebraska Geological Survey were adopted in 1940 and updated in 1956. § 57905(3)(c) of the Nebraska Revised Statutes gives the Oil and Gas Conservation Commission the authority to require drilling, casing, operating, and plugging of wells to prevent: 1) the escape of oil or gas out of one stratum into another; 2) the intrusion of water into oil or gas strata; 3) the pollution of freshwater supplies by oil, gas, or saltwater; and 4) the prevention of blowouts, cave-ins, seepages and fires.

State Plugging Efforts

The Well Plugging and Abandonment Trust Fund was created not only to plug abandoned wells, but also to complete surface restoration through the collection of a fee. Rule-making is required to establish the fees that are deposited into the fund.

Sources of Plugging Funds

Fee Idle well fee

Definitions

Other

Though Nebraska does not define orphaned, abandoned, or temporarily abandoned wells, the state defines an inactive well as either shut-in or temporarily abandoned.

Blanket Bonds

	<i>Amount</i>	<i>Add'l Criteria</i>	<i>Number of Well</i>
Base	\$25,000		

Single Well Securities

	<i>Amount</i>	<i>Add'l Criteria</i>	<i>Depth</i>	<i>Base</i>
	\$5,000			

Statutory Authorities

Plugging Fund

Well Plugging and Abandonment Trust Fund: Revised Statutes, §57-923

Authority to Regulate

Revised Statutes, § 57-905(3)(c) , § 57-923 and Title 267, Chapter 3-040 of the rules and regulations

Security or Financial Assurance

Date Security First Required:	1959
Modified Since 2000 Survey	<input type="checkbox"/>
Regulatory Authority Adjustment	<input checked="" type="checkbox"/>
Separate Site Restoration Bond	<input type="checkbox"/>

Types of Security Bonds Allowed

CD	<input checked="" type="checkbox"/>
Cash	<input checked="" type="checkbox"/>
Certificate of Insurance	<input type="checkbox"/>
Consolidated Financial Fund	<input type="checkbox"/>
Escrow Account	<input type="checkbox"/>
Financial Statements	<input type="checkbox"/>
Letter of Credit	<input type="checkbox"/>
Liens	<input type="checkbox"/>
Security Interest	<input type="checkbox"/>
Surety and/or Performance Bonds	<input checked="" type="checkbox"/>

Appendix S: Nevada

Regulatory Authority

Commission on Mineral Resources
400 West King Street, Suite 106
Carson City, NV 89703-4212
www.minerals.state.nv.us

Background

Regulation of the Nevada oil and gas industry began in March 1954 with ground water protection and plugging and abandonment procedures. The Department of Minerals was created on July 1, 1983 and given the responsibility to regulate oil and gas activities. In October 1993, the department was changed to the Division of Minerals under the Nevada Department of Business and Industry. Regulations have been amended in 1976, 1987 and 1994. The Division of Minerals has the authority to require the plugging of wells to prevent the escape of oil or gas, as well as the authority to require a reasonable bond for plugging purposes. The Nevada Division of Environmental Protection is responsible for the regulation of injection wells. In July 1999, the Division of Minerals underwent reorganization, and is now part of the Nevada Commission of Mineral Resources. Regulation 522.430 reads: 1. "Each well in which production casing has been run but which has not been operated for one year, and each well in which no production casing has been run and for which drilling operations have ceased for 30 days, must be immediately plugged." 2. "The administrator may, for good cause, grant an additional six months for the well to be plugged." Division of Minerals policy requires the operator to conduct an inspection to determine the integrity of the wellhead, etc., prior to the extension request being granted.

State Plugging Efforts

Nevada has no orphan wells.

Definitions

Abandoned Well

Nevada classifies a well as abandoned when production of oil/gas has ceased and the well becomes unprofitable.

Notes

Nevada considers a well to be shut in when the valves are closed and the well stops producing.

Temporarily Abandoned Well

Nevada considers a temporarily abandoned well as one that has been shut in but not plugged.

Blanket Bonds

	Amount	Add'l Criteria	Number of Well
Base	\$50,000		

Single Well Securities

	Amount	Add'l Criteria	Depth	Base
	\$10,000			

Statutory Authorities

Definitions

Rules of Practice and Procedure, 522.430

Authority to Regulate

Idle Wells: NRS 522.040

Security or Financial Assurance

Date Security First Required:	1954
Modified Since 2000 Survey	<input type="checkbox"/>
Regulatory Authority Adjustment	<input checked="" type="checkbox"/>
Separate Site Restoration Bond	<input type="checkbox"/>

Types of Security Bonds Allowed

CD	<input checked="" type="checkbox"/>
Cash	<input checked="" type="checkbox"/>
Certificate of Insurance	<input type="checkbox"/>
Consolidated Financial Fund	<input type="checkbox"/>
Escrow Account	<input type="checkbox"/>
Financial Statements	<input type="checkbox"/>
Letter of Credit	<input type="checkbox"/>
Liens	<input type="checkbox"/>
Security Interest	<input type="checkbox"/>
Surety and/or Performance Bonds	<input checked="" type="checkbox"/>

Appendix T: New Mexico

Regulatory Authority

New Mexico Oil Conservation
1220 South St. Francis Drive
Santa Fe, NM 87505
www.emnrd.state.nm.us/ocd

Background

The New Mexico Oil Conservation Commission was created in 1935 and empowered to promulgate regulations to protect ground water by plugging and abandonment. The Oil Conservation Division has been given authority to require dry or abandoned wells to be plugged in a way that confines the oil, natural gas, or water to the strata in which they are found and to expend the oil and gas reclamation fund and take all actions necessary to plug dry or abandoned oil and gas wells in accordance with the provisions of the Oil and Gas Act, including disposition of salvageable equipment and material removed from wells being plugged. Significant revisions include: the 1950 requirement of a bond; the 1957 requirement that water from oil-producing pools with water-driven reservoirs be disposed of in disposal wells; the 1967 elimination of pit disposal; the 1977 increase of the blanket bond to \$50,000; the 1986 addition of cash bonds as acceptable security; the 1987 requirement for mechanical integrity testing (MIT) on all wells that have not produced for one year; and the 2000 amendment to allow acceptance of irrevocable letters of credit as financial security.

State Plugging Efforts

New Mexico has an Oil and Gas Reclamation Fund comprised of a percentage of the severance tax and forfeited plugging bonds. This plugging fund covers the cost of environmental site remediation and the cost of plugging orphaned wells. New Mexico has not found any orphan wells needing to be plugged since about 2004, and they anticipate that they have found them all and placed them on their plugging list.

Sources of Plugging Funds

Revenue Forfeited bonds

Definitions

Abandoned Well

An abandoned well is an inactive well with either an unknown or an insolvent operator.

Notes

A shut-in well is defined as a production or injection well that is temporarily inactive, whether by closing a valve or disconnection or other physical means.

Orphan Well

Although not statutorily defined, an orphan well is recognized as a well without a financially responsible operator.

Other

New Mexico uses the term inactive well to describe a well not being utilized for beneficial purposes such as production, injection, or monitoring and which is not being drilled, completed, repaired, or worked over

Temporarily Abandoned Well

A temporarily abandoned well is defined as a well that is inactive and has been approved for temporary abandonment in accordance with the New Mexico Oil Conservation Division. Temporarily abandoned well status may be approved for up to five years.

Single Well Securities

	Amount	Add'l Criteria	Depth	Base
\$10,000	+\$1/ft	Other counties		
Base	\$5,000	+\$1/ft	Major	

Statutory Authorities

Plugging Fund

Oil and Gas Reclamation Fund: NMSA 1978, §70-2-38

Authority to Regulate

NMSA 1978, § 70-2

12.B (1); NMSA 1978, § 70-2-14

Security or Financial Assurance

Date Security First Required:	1935
Modified Since 2000 Survey	<input checked="" type="checkbox"/>
Regulatory Authority Adjustment	<input type="checkbox"/>
Separate Site Restoration Bond	<input checked="" type="checkbox"/>

Types of Security Bonds Allowed

CD	<input type="checkbox"/>
Cash	<input checked="" type="checkbox"/>
Certificate of Insurance	<input type="checkbox"/>
Consolidated Financial Fund	<input type="checkbox"/>
Escrow Account	<input type="checkbox"/>
Financial Statements	<input type="checkbox"/>
Letter of Credit	<input checked="" type="checkbox"/>
Liens	<input type="checkbox"/>
Security Interest	<input checked="" type="checkbox"/>
Surety and/or Performance Bonds	<input checked="" type="checkbox"/>

Appendix U: New York

Regulatory Authority

Department of Environmental
625 Broadway, Third Floor
Albany, NY 12233-6500
www.dec.ny.gov

Background

Current requirements for the regulation of oil and gas wells were put in place in 1963, especially with regard to ground water protection and bonding procedures. However, statutes that required wells to be plugged and abandoned were in place as early as 1879. The Environmental Conservation Law gives the Division of Mineral Resources the authority to enter, take temporary possession of, plug, or replug an abandoned well when an owner or operator neglects or refuses to comply with the rules and regulations. Rules also make it unlawful to shut in or temporarily abandon a well for more than one year or 90 days, respectively, without department approval.

State Plugging Efforts

New York's plugging fund is funded through permit fees, settlements, and legislative appropriations. There are approximately 40,000 wells drilled in the state for which no records exist. Additional orphan wells are located each year.

Sources of Plugging Funds

Fee	Permit fee
Fine	Settlements
Public	Appropriations

Definitions

Abandoned Well

An abandoned well is defined as any unplugged well shut in for more than one year without department approval and whose ownership might or might not be known.

Orphan Well

New York classifies an orphan well an inactive well with an operator which cannot be found.

Temporarily Abandoned Well

A temporarily abandoned well is one in which

operations have been discontinued or the well has been closed in without plugging and abandonment operations.

Blanket Bonds

	Amount	Add'l Criteria	Number of Well
Minimum	\$25,000	to \$100,000	
Maximum	\$40,000	to \$150,000	

Single Well Securities

	Amount	Add'l Criteria	Depth
Maximum	\$0	Anticipated costs	6,000
Mid	\$5,000		2,501 - 6,000
Minimum	\$2,500		< 2,500

Security covers plugging & restoration

Statutory Authorities

Plugging Oil and Gas Wells

Environmental Conservation Law, Article 23-0305

Authority to Regulate

Environmental Conservation Law, Article 23-0805

Security or Financial Assurance

Date Security First Required:	1963
Modified Since 2000 Survey	<input type="checkbox"/>
Regulatory Authority Adjustment	<input type="checkbox"/>
Separate Site Restoration Bond	<input type="checkbox"/>

Types of Security Bonds Allowed

CD	<input checked="" type="checkbox"/>
Cash	<input checked="" type="checkbox"/>
Certificate of Insurance	<input type="checkbox"/>
Consolidated Financial Fund	<input type="checkbox"/>
Escrow Account	<input type="checkbox"/>
Financial Statements	<input type="checkbox"/>
Letter of Credit	<input checked="" type="checkbox"/>
Liens	<input type="checkbox"/>
Security Interest	<input type="checkbox"/>
Surety and/or Performance Bonds	<input checked="" type="checkbox"/>

Appendix V: North Dakota

Regulatory Authority

Industrial Commission
600 East Boulevard Avenue, Department
Bismarck, ND 58505-0840
www.dmr.nd.gov/oilgas

Background

Oil conservation laws and rules were enacted in 1941, although oil was not discovered within the state until 1951. Significant changes since that time include increased bond amounts in 1961, the abolition of the use of earthen pits for produced water storage in 1969, monitoring the disposal of drilling pit fluids in 1982, the requirement for mechanical integrity testing on temporarily abandoned wells in 1990, as well as other bond increases. The North Dakota Industrial Commission is responsible for regulating idle wells.

State Plugging Efforts

Title 38 of the North Dakota Century Code establishes the abandoned oil and gas well plugging and site reclamation fund. North Dakota collects funds for the purpose of plugging abandoned wells. Funds are received in many ways including the cost of drilling permits.

Sources of Plugging Funds

Fee	Permit fee
Fine	Civil penalties
Public	Operating budget
Revenue	Forfeited bonds
Revenue	Salvage

Definitions

Abandoned Well

An abandoned well is defined as one which has had equipment removed, or has failed to produce oil or gas for one year.

Orphan Well

North Dakota does not statutorily define orphan wells.

Temporarily Abandoned Well

A temporarily abandoned well is defined as a well approved by the director with stipulations for temporary abandoned status for one year (NDAC 43-02-03-55).

Blanket Bonds

	Amount	Add'l Criteria	Number of Well
Minimum	\$50,000	< 10	
Maximum	\$100,00	> 10	

The \$50,000 blanket bond is limited in its coverage to contain no more than three unplugged dry holes, plugged wells with site not reclaimed, and/or abandoned wells;

Single Well Securities

	Amount	Add'l Criteria	Depth
Base	\$20,000		

Wells drilled to a total depth of 2,000 feet may be bonded in a lesser amount upon approval

Statutory Authorities

Plugging Fund

Abandoned Oil and Gas Well Plugging and Site Reclamation Fund [North Dakota Century Code, § 38-08-04.(5)]

Definitions

North Dakota Administrative Code 43-02-03-55

Authority to Regulate

North Dakota Century Code, § 38-08-04 (2)]

Security or Financial Assurance

Date Security First Required:	1941
Modified Since 2000 Survey	<input type="checkbox"/>
Regulatory Authority Adjustment	<input type="checkbox"/>
Separate Site Restoration Bond	<input type="checkbox"/>

Types of Security Bonds Allowed

CD	<input type="checkbox"/>
Cash	<input checked="" type="checkbox"/>
Certificate of Insurance	<input type="checkbox"/>
Consolidated Financial Fund	<input type="checkbox"/>
Escrow Account	<input type="checkbox"/>
Financial Statements	<input type="checkbox"/>
Letter of Credit	<input type="checkbox"/>
Liens	<input type="checkbox"/>
Security Interest	<input type="checkbox"/>
Surety and/or Performance Bonds	<input checked="" type="checkbox"/>

Appendix W: Ohio

Regulatory Authority

Ohio Department of Natural Resources
2045 Morse Road, Buildings H2 & H3
Columbus, OH 43229-6693

Background

The Division of Oil and Gas was created in 1965 and established as the state's regulatory authority. However, actual regulation began in 1883 when the state's first oil and gas law was enacted to control methods used to case and plug oil and gas wells to prevent water from penetrating and contaminating the oil- and gas-bearing rock. Plugging and abandonment procedures and ground water protection were established with the creation of the Division of Oil and Gas.

The Division of Mines of the Ohio Department of Industrial Relations oversees and supervises plugging operations that are located in a coal-bearing township. Significant revisions to the statutes include: the required restoration of lands disturbed after drilling and plugging a well (1974); permit issuance, well construction and monitoring and reporting requirements (1982); elimination of brine storage pits and establishment of standards to define contamination of water supplies (1985); amendment of annular disposal rules (1990); establishment of the Orphan Well Landowner Grant Program (1995); and multiple rule changes in 1998. According to § 1509.12 of the Ohio Revised Code, the agency shall order any well that is incapable of production in commercial quantities to be plugged unless written permission is granted.

State Plugging Efforts

Ohio's plugging funds come from oil and gas severance taxes.

Sources of Plugging Funds

Tax Production assessment

Definitions

Abandoned Well

Ohio defines an abandoned well as one that has been deserted without being properly

Temporarily Abandoned Well

A temporarily abandoned well is a unit for which permission has been given to delay plugging.

Blanket Bonds

	Amount	Add'l Criteria	Number of Well
Minimum	\$15,000		
Maximum	\$30,000		
	\$30,000 bond for financial statements		

Single Well Securities

	Amount	Add'l Criteria	Depth
Base	\$5,000		

Statutory Authorities

Plugging Oil and Gas Wells

Procedure Upon Failure to Comply with Plugging Requirements: [Chapter 1509.071]

Authority to Regulate

Chapter 1509.12 of the Ohio Revised Code

Security or Financial Assurance

Date Security First Required:	1963
Modified Since 2000 Survey	<input type="checkbox"/>
Regulatory Authority Adjustment	<input type="checkbox"/>
Separate Site Restoration Bond	<input type="checkbox"/>

Types of Security Bonds Allowed

CD	<input checked="" type="checkbox"/>
Cash	<input checked="" type="checkbox"/>
Certificate of Insurance	<input type="checkbox"/>
Consolidated Financial Fund	<input type="checkbox"/>
Escrow Account	<input type="checkbox"/>
Financial Statements	<input checked="" type="checkbox"/>
Letter of Credit	<input checked="" type="checkbox"/>
Liens	<input type="checkbox"/>
Security Interest	<input type="checkbox"/>
Surety and/or Performance Bonds	<input checked="" type="checkbox"/>

Appendix X: Oklahoma

Regulatory Authority

Oklahoma Corporation Commission
PO Box 52000
Oklahoma City, OK 73152-2000
www.occeweb.com

Background

In 1915, the Oil Conservation Division of the Oklahoma Corporation Commission was given exclusive jurisdiction over all wells drilled for exploration and production of oil and gas. Regulation for ground water protection and for plugging and abandonment procedures began in 1917. The Well Plugging Act passed in 1965. In Oklahoma, the Corporation Commission has sole and exclusive authority to regulate oil and gas activities, but cannot issue informal policies.

State Plugging Efforts

Oklahoma has a Corporation Commission Plugging Fund, as established in Title 17 of the Oklahoma Statutes and is funded through an excise tax of one hundredth of one percent of the gross value of oil and gas produced.

Sources of Plugging Funds

Tax Excise tax

Definitions

Abandoned Well

Corporation Commission policy provides that an abandoned well is a well drilled before or since the regulatory program was established, is not currently producing, has not received regulatory approval to remain idle or temporarily abandoned and has an unknown or insolvent operator.

Under Title 17 O.S., § 53.3, relating to abandoned oil and gas well-site equipment, a state lien clause provides a definition for abandoned well-site equipment that also can be applied to the well. Part B of the referenced statute specifies: "Well-site equipment is presumed abandoned if: 1. For longer than one year, the well has shown no activity in terms of production, injection, disposal or testing, and has not otherwise been maintained in compliance with plugging rules; and 2a. The last operator of record is without valid surety as required by Title 17 O.S., § 318.1 and cannot be located by the Commission after diligent search, or 2b. The last operator of record has plugging liability in excess of the amount of such operator's surety as filed with the Commission." The section clarifies this language in Part E by stating "For purposes of this act the term 'abandoned well' shall mean those wells that are described and listed in a report published by the commission identifying oil or gas wells which have been determined to be abandoned or orphaned by the commission as a result of bankruptcy, inability to find the owner, or for other reasons."

Temporarily Abandoned Well

Oklahoma Corporation Commission policy provides that a

temporarily abandoned well is defined as a well drilled since the regulatory program was established, is not currently producing, has received regulatory approval to remain idle or temporarily abandoned and has a known and solvent operator. OAC 165:10-113 requires that a cased well be plugged within one year after cessation of production, an uncased well be plugged within 72 hours after completion of drilling or testing, and a well with surface casing only be plugged within 90 days after completion of drilling or testing. OAC 165:10-11-9 allows for exception to OAC 165:10-11-3 provided that the well is placed in an environmentally safe condition. Abandonment is valid for two years with extensions available for good cause. Wells granted temporary exemption from plugging are considered "temporarily abandoned wells" in Oklahoma.

Blanket Bonds

	Amount	Add'l Criteria	Number of Well
Minimum	\$25,000		
Maximum	\$50,000		
	Net worth for financial statement		

Single Well Securities

	Amount	Add'l Criteria	Depth
Base	\$0	Varies as established by licensed plunger	

Statutory Authorities

Plugging Oil and Gas Wells

Plugging and Abandonment: [OAC 165: 10-11-9 and OAC 165: 10-11-3].

Authority to Regulate

Idle Wells: Title 52 O.S., § 139

Security or Financial Assurance

Date Security First Required:	1922
Modified Since 2000 Survey	<input type="checkbox"/>
Regulatory Authority Adjustment	<input type="checkbox"/>
Separate Site Restoration Bond	<input type="checkbox"/>

Types of Security Bonds Allowed

CD	<input checked="" type="checkbox"/>
Cash	<input checked="" type="checkbox"/>
Certificate of Insurance	<input type="checkbox"/>
Consolidated Financial Fund	<input type="checkbox"/>
Escrow Account	<input type="checkbox"/>
Financial Statements	<input checked="" type="checkbox"/>
Letter of Credit	<input checked="" type="checkbox"/>
Liens	<input type="checkbox"/>
Security Interest	<input type="checkbox"/>
Surety and/or Performance Bonds	<input checked="" type="checkbox"/>

Appendix Y: Pennsylvania

Regulatory Authority

Department of Environmental Protection
PO Box 8765
Harrisburg, PA 17105-8765

Background

The Bureau of Oil and Gas Management was given responsibility for oil and gas regulation in 1955. Pennsylvania has had legislation in place requiring non-producing wells to be plugged to protect the formation since the 1890s. Legislation in 1984 updated plugging requirements to include environmental considerations, require bonding, and allow for a specified period of approved non-production before the well must be plugged. Act 57 of Nov. 26, 1997, amended the administrative code and exempted any well drilled prior to April 18, 1985, from the bonding requirements of the Oil and Gas Act. Operators with existing Phased Deposit Bonds can continue with that bonding option, however, there is no new eligibility for Phased Deposit Bonding. Fees in lieu of bonding were eliminated for pre-act wells.

State Plugging Efforts

Pennsylvania's Abandoned Well Plugging Fund is established in Title 58 of the Pennsylvania's statutes and states that all fines, civil penalties, permit and registration fees collected under the Oil and Gas Act, are appropriated to the Department of Environmental Resources to carry out plugging operations. A \$50 surcharge in addition to the permit fee established by the department is charged and paid into the State Treasury to be set aside for the Abandoned Well Plugging Fund.

There is a restricted revenue account known as the Orphan Well Plugging Fund. In addition to the permit fee established by the department, a \$100 surcharge for all new wells to be drilled for oil production and a \$200 surcharge for wells to be drilled for gas production are placed in the Orphan Well Plugging Fund, and are expended only to plug orphan wells. If an operator rehabilitates a well abandoned by another operator or an orphan well, the permit fee and the surcharge for such well are waived. Expenditures by the department for the plugging of orphan wells are limited to fees collected under the act and no funding from the General Fund is available for this purpose.

Sources of Plugging Funds

Fee Permit fee

Definitions

Abandoned Well

Pennsylvania defines an abandoned well as one that has not been used to produce, extract, or inject gas, petroleum, or other liquids within the preceding 12 months; a well for which the equipment necessary for production, extraction, or injection has been removed; or a well considered dry and not equipped for

production within 60 days of drilling. However, the term does not include wells granted inactive status.

Orphan Well

In 1992, the state added a definition of an orphan well as any well abandoned prior to the effective date of the Oil and Gas Act (April 18, 1985) that the current landowner or lessee never operated or affected and has not yielded the current owner, operator, or lessee any economic benefit except as a landowner or recipient of royalty interest. The Oil and Gas Act also makes it illegal to identify a well as an orphan well by misrepresentation.

Blanket Bonds

	Amount	Add'l Criteria	Number of Well
Base	\$25,000		
Security covers drilling, plugging, water supply, replacement and restoration			

Single Well Securities

	Amount	Add'l Criteria	Depth
Base	\$2,500		

Statutory Authorities

Plugging Oil and Gas Wells

Title 58 P.S. Chapter 11 Oil and Gas Act, Chapter 6 Misc Provisions, §601.601

Authority to Regulate

P.L 1140, No. 223; 58 P.S. § 601.20; Oil and Gas Act (58 PS 601.509(4))

Security or Financial Assurance

Date Security First Required:	1985
Modified Since 2000 Survey	<input type="checkbox"/>
Regulatory Authority Adjustment	<input type="checkbox"/>
Separate Site Restoration Bond	<input type="checkbox"/>

Types of Security Bonds Allowed

CD	<input checked="" type="checkbox"/>
Cash	<input checked="" type="checkbox"/>
Certificate of Insurance	<input type="checkbox"/>
Consolidated Financial Fund	<input type="checkbox"/>
Escrow Account	<input type="checkbox"/>
Financial Statements	<input type="checkbox"/>
Letter of Credit	<input type="checkbox"/>
Liens	<input type="checkbox"/>
Security Interest	<input type="checkbox"/>
Surety and/or Performance Bonds	<input checked="" type="checkbox"/>

Appendix Z: South Dakota

Regulatory Authority

Department of Environment & Natural
2050 West Main, Suite One
Rapid City, SD 57702
www.state.sd.us/denr/des/mining/oil&gas

Authority to Regulate

Idle Wells: SDCL 45-9-11

Background

The regulation of oil and gas wells in South Dakota began in 1939. Ground water protection and plugging and abandonment regulations followed in 1943. Enhancement of the ground water regulations occurred in 1960 and 1967. Regulations for plugging and abandonment were enacted in 1960, 1974, 1985 and 1996 and were accompanied by appropriate increases in bonding amounts for plugging and for surface restoration.

South Dakota statutes give the Department of the Environment and Natural Resources the authority to regulate the drilling and plugging of wells and all other operations. A water and environment fund is designated for well rehabilitation and plugging.

State Plugging Efforts

No orphan wells.

Definitions

Abandoned Well

South Dakota has no definition for abandoned wells.

Orphan Well

South Dakota has no definition for orphaned wells.

Temporarily Abandoned Well

In reference to temporarily abandoned wells, South Dakota states that a well with production casing may not be temporarily abandoned for more than six months unless the secretary grants the operator an extension.

Statutory Authorities

Plugging Fund

Well Rehabilitation and Plugging Subfund [SDCL 46-2-23]

Definitions

Idle Well: Rule: ARSD 74:10:04:03

Appendix AA: Tennessee

Regulatory Authority

Department of Environment and
401 Church Street, 1st Floor, L&C Annex
Nashville, TN 37243-0435
<http://www.state.tn.us/environment/>

Background

Regulation of oil and gas wells, including plugging and abandonment procedures, began in 1972. Ground water protection rules also came into place that year. Improvements to the program since that time include regulations to limit the blanket bond to 10 wells in 1987 and additional changes to the bonding provisions in 1988. The Tennessee Division of Geology is responsible for regulating idle wells.

State Plugging Efforts

Sources of Plugging Funds

Fine Civil penalties

Definitions

Abandoned Well

There is no official definition for abandoned well. However, the State Oil and Gas Board of Tennessee recognizes any well that is no longer being operated by the official operator of record as being abandoned. No definitions are provided by statute or rule for any of these terms. Tennessee uses the sum of all penalty payments to fund various projects, including the plugging of abandoned wells.

Orphan Well

There is no official definition for orphaned well.

Temporarily Abandoned Well

There is no official definition for temporarily abandoned well.

Blanket Bonds

	Amount	Add'l Criteria	Number of Well
Base	\$20,000		

Required when the landowner/lessee is not party to the leasing agreement

Single Well Securities

	Amount	Add'l Criteria	Depth
Base	\$5,000		

Statutory Authorities

Authority to Regulate

Temporarily Abandoned Well: [1040-2-2-.02(3) and 1040-4-2-.10]

Plugging Fund

State Oil and Gas Board Reclamation Fund [T.C.A. § 60-1-404]

Security or Financial Assurance

Date Security First Required:	1943
Modified Since 2000 Survey	<input type="checkbox"/>
Regulatory Authority Adjustment	<input type="checkbox"/>
Separate Site Restoration Bond	<input type="checkbox"/>

Types of Security Bonds Allowed

CD	<input checked="" type="checkbox"/>
Cash	<input checked="" type="checkbox"/>
Certificate of Insurance	<input type="checkbox"/>
Consolidated Financial Fund	<input type="checkbox"/>
Escrow Account	<input type="checkbox"/>
Financial Statements	<input type="checkbox"/>
Letter of Credit	<input type="checkbox"/>
Liens	<input type="checkbox"/>
Security Interest	<input type="checkbox"/>
Surety and/or Performance Bonds	<input checked="" type="checkbox"/>

Appendix BB: Texas

Regulatory Authority

Railroad Commission of Texas
PO Box 12967
Austin, TX 78711

Background

The Railroad Commission of Texas (RRC) was given authority in 1919 for the regulation of oil and gas wells. Rule 20 for ground water protection was implemented in 1919. Plugging and abandonment procedures were initiated through Statewide Rules 10(b), 13 and 23 on Oct. 17, 1933. Chapter 89 of the Texas Oil and Gas Conservation Laws and Statewide Rule 14 give the RRC authority to require the plugging of abandoned oil and gas wells, and that authority was extended in 1965 to plug wells using state funds. Available funds at that time consisted of general revenue appropriations. However, a dedicated well plugging fund was created in 1983 and expanded 1991. Chapter 91 of the Texas Oil and Gas Conservation Laws enlarged the plugging fund and established the Oil Field Cleanup Fund to plug wells and remediate pollution sites abandoned by oil and gas operators. Changes in the bonding program were made in 1983, 1991 and 1995.

State Plugging Efforts

Sources of Plugging Funds

Tax Production assessment

Definitions

Abandoned Well

An abandoned well is defined as a well that has been abandoned or has not been operated for a period of 12 or more months.

Temporarily Abandoned Well

A temporarily abandoned well is defined as a well that is currently not in service. An abandoned well is defined as a unit that has not reported production for the preceding 12 months, and whose current operator's commission-approved organization report has lapsed.

Blanket Bonds

	Amount	Add'l Criteria	Number of Well
Minimum	\$25,000		1 – 10
Mid	\$50,000		11 – 100
Maximum	\$250,00		> 100
For reclamation plants only; in the amount required to close the facility			

Single Well Securities

	Amount	Add'l Criteria	Depth
Base	\$2	Per foot	Total

Statutory Authorities

Authority to Regulate

Idle Wells: [Texas Oil and Gas Conservation Laws, Chapter 89 and Statewide Rule

Security or Financial Assurance

Date Security First Required:	1983
Modified Since 2000 Survey	<input type="checkbox"/>
Regulatory Authority Adjustment	<input type="checkbox"/>
Separate Site Restoration Bond	<input type="checkbox"/>

Types of Security Bonds Allowed

CD	<input type="checkbox"/>
Cash	<input checked="" type="checkbox"/>
Certificate of Insurance	<input type="checkbox"/>
Consolidated Financial Fund	<input type="checkbox"/>
Escrow Account	<input type="checkbox"/>
Financial Statements	<input type="checkbox"/>
Letter of Credit	<input checked="" type="checkbox"/>
Liens	<input type="checkbox"/>
Security Interest	<input type="checkbox"/>
Surety and/or Performance Bonds	<input checked="" type="checkbox"/>

Appendix CC: Utah

Regulatory Authority

Utah Department of Natural Resources
PO Box 145801
Salt Lake City, UT 84114-5801
www.ogm.utah.gov/oilgas

Background

Regulation of oil and gas in Utah began in 1955, including rules governing ground water protection and plugging and abandonment. Authority for drilling, operating, producing, and plugging wells is found in the Utah Code Annotated, § 40-6-1.

In 1983, the Utah Legislature revised the Oil and Gas Conservation Act to improve regulatory responsibilities for ground water protection, site restoration, well plugging, and adequate bonding amounts. In 1993, the Division of Oil, Gas and Mining established and distributed a guidance document referring to Oil and Gas E&P Waste Disposal Strategy. In 1996 the division prepared and distributed an Environmental Handbook for the oil and gas exploration and production (E&P) industry. In 1999, the division notified operators of compliance status regarding the Shut-in and Temporarily Abandoned Wells Rule (Rule R649-3-36).

The Division of Oil and Gas and Mining is primarily responsible for the regulation of idle wells, and shares that responsibility with the U.S. Bureau of Land Management, the U.S. Bureau of Indian Affairs, the Utah Division of Forestry, Fire and State Lands, and the Utah School and Institutional Trust Lands Administration because of their respective leasing responsibilities on various types of public land.

State Plugging Efforts

Sources of Plugging Funds

Tax Excise tax

Definitions

Abandoned Well

There is no regulatory definition of abandoned well; however, the standard usage of the term is a well no longer in use, whether drilled as a dry hole, or which has ceased to produce or inject, or which cannot be operated.

Temporarily Abandoned Well

A temporarily abandoned well is one that has been completed, is not shown capable of production in paying quantities, and is not presently being operated.

Blanket Bonds

	<i>Amount</i>	<i>Add'l Criteria</i>	<i>Number of Well</i>
Minimum	\$15,000		1000 – 3000
Mid	\$30,000		3,001 – 10,000
Maximum	\$60,000		> 10,000

Single Well Securities

	<i>Amount</i>	<i>Add'l Criteria</i>	<i>Depth</i>
Maximum	\$120,000		> 1,000
Minimum	\$15,000		< 1,000

Security covers drilling, plugging, water supply, replacement and restoration

Statutory Authorities

Plugging Fund

Utah Code Annotated, §40-6-14.5

Authority to Regulate

Utah Code Annotated, § 40-6-1 et. Seq

Security or Financial Assurance

Date Security First Required:	1955
Modified Since 2000 Survey	<input checked="" type="checkbox"/>
Regulatory Authority Adjustment	<input type="checkbox"/>
Separate Site Restoration Bond	<input type="checkbox"/>

Types of Security Bonds Allowed

CD	<input checked="" type="checkbox"/>
Cash	<input checked="" type="checkbox"/>
Certificate of Insurance	<input type="checkbox"/>
Consolidated Financial Fund	<input type="checkbox"/>
Escrow Account	<input type="checkbox"/>
Financial Statements	<input type="checkbox"/>
Letter of Credit	<input checked="" type="checkbox"/>
Liens	<input type="checkbox"/>
Security Interest	<input type="checkbox"/>
Surety and/or Performance Bonds	<input checked="" type="checkbox"/>

Appendix DD: Virginia

Regulatory Authority

Department of Mines, Minerals & Energy
PO Box 1416
Abingdon, VA 24212
www.dmme.virginia.gov/dgo

Background

Virginia first enacted statutory standards in 1948. However, the regulatory program began in 1950, with creation of the Oil and Gas Board. The Department of Mines, Minerals and Energy was created in 1985. The Virginia Statutes give specific authority for the abandonment or cessation of a well and the orphan well program to the Department. State regulations established in 1950 address protection for ground water and plugging and abandonment procedures. The Virginia Gas and Oil Act passed in 1990, with subsequent regulations finalized in 1991 and further revised in November 1998.

State Plugging Efforts

The Orphan Well Fund was statutorily established as a non-lapsing revolving fund to be administered by the Department pursuant to the provisions of this section. The Orphan Well Fund is funded through appropriations by the General Assembly. Further, operators applying for a new permit for any activity other than geophysical operations are required to pay a \$50 surcharge per permit into the Orphan Well Fund. Interest earned on the Orphan Well Fund remains in the fund, which is legislatively established on the books of the state comptroller so that any funds remaining at the end of the biennium will not revert to the general fund, but are restricted to the purposes of restoration and plugging of orphan wells. So that, in the event of a discontinuance of the Orphan Well Fund, any remaining funds are designated to the Gas and Oil Plugging Restoration Fund.

The director is authorized to conduct a survey to determine the condition and location of orphan wells in the Commonwealth and to establish priorities for the plugging and restoration of the identified orphan wells. The plugging and restoration of orphan well sites which pose an imminent danger to public safety are identified as having the highest priority.

State statutes require that the director make every reasonable effort to identify and obtain the permission of a surface owner prior to entering onto the surface owner's land. In all cases, the director is required to publish a notice of the proposed plugging and restoration work to be conducted on the property in a newspaper of general circulation in the county or city where an orphan well is located.

Sources of Plugging Funds

Fee	Permit fee
-----	------------

Definitions

Orphan Well

The Code of Virginia defines an orphaned well as a well abandoned prior to July 1, 1950, or a well for which no records exist concerning drilling, plugging, or abandonment.

Blanket Bonds

	Amount	Add'l Criteria	Number of Well
Minimum	\$25,000		1 – 15
Mid	\$75,000		31 – 50
Mid	\$50,000		16 – 30
Maximum	\$100,00		> 50

Single Well Securities

	Amount	Add'l Criteria	Depth
Base	\$10,000	+\$2,000 / per acre	

Statutory Authorities

Plugging Fund

Orphan Well Fund: [§ 45.1-361.40]

Authority to Regulate

§ 45.1-361.34

Security or Financial Assurance

Date Security First Required:	1955
Modified Since 2000 Survey	<input type="checkbox"/>
Regulatory Authority Adjustment	<input type="checkbox"/>
Separate Site Restoration Bond	<input type="checkbox"/>

Types of Security Bonds Allowed

CD	<input checked="" type="checkbox"/>
Cash	<input checked="" type="checkbox"/>
Certificate of Insurance	<input type="checkbox"/>
Consolidated Financial Fund	<input type="checkbox"/>
Escrow Account	<input type="checkbox"/>
Financial Statements	<input type="checkbox"/>
Letter of Credit	<input type="checkbox"/>
Liens	<input type="checkbox"/>
Security Interest	<input type="checkbox"/>
Surety and/or Performance Bonds	<input checked="" type="checkbox"/>

Appendix EE: West Virginia

Regulatory Authority

Department of Environmental Protection
601 57th Street, Southeast
Charleston, WV 25304

Background

West Virginia initiated regulating oil and gas operations in 1929, including plugging and abandonment procedures. Ground water protection legislation, passed in 1969, was revised in 1991. The West Virginia Abandoned Well Act passed in 1992 incorporates into West Virginia Code, § 22-10 language requiring financial responsibility for all wells, establishing abandoned well plugging priorities, and providing for interested party plugging. Abandoned Well Regulations 35-6 were enacted in 1993. The West Virginia Division of Environmental Protection, Office of Oil and Gas, is responsible for regulation of idle wells.

State Plugging Efforts

West Virginia's statutes provide for an oil and gas reclamation fund to be administered by the secretary. The secretary is responsible for preparing plans to reclaim and plug abandoned wells which have not been reclaimed or plugged, or which have been improperly reclaimed or plugged. The secretary has authority to reclaim and plug such wells as funds become available in the oil and gas reclamation fund. The fund may also be utilized for the purchase of abandoned wells, where necessary and for the reclamation of those wells, as well as for any engineering, administrative and research costs as might be incurred in process of reclaiming and plugging all wells, abandoned or otherwise.

Sources of Plugging Funds

Fee	Permit fee
Revenue	Forfeited bonds

Definitions

Abandoned Well

The state defines an abandoned well as any well that is completed as a dry hole or has not been in use for 12 consecutive months, or has not shown any bona fide future use.

Orphan Well

For purposes of the Abandoned Well Program, even

though "orphaned well" is not a defined term in the statute, it is considered to be a well having no production reported to the state since 1984, having no affidavit on file showing total plugging, and not identified as a storage, secondary recovery, or disposal well in the oil and gas data system.

Other

West Virginia classifies wells as having an "inactive status" when they are not producing or injecting and have received state approval to remain idle by demonstrating the existence of bona fide future use.

Blanket Bonds

	Amount	Add'l Criteria	Number of Well
Base	\$50,000		

Single Well Securities

	Amount	Add'l Criteria	Depth
Base	\$5,000		

Statutory Authorities

Plugging Fund

Reclamation Fund:[WV Code 22-6-29]

Definitions

WV Code 22-6-19 and 22-10, State Regulations 35-5 and 35-6, and 40 CFR 146.3

Authority to Regulate

West Virginia Code 226 and 22-10

Security or Financial Assurance

Date Security First Required:	1963
Modified Since 2000 Survey	<input type="checkbox"/>
Regulatory Authority Adjustment	<input type="checkbox"/>
Separate Site Restoration Bond	<input type="checkbox"/>

Types of Security Bonds Allowed

CD	<input checked="" type="checkbox"/>
Cash	<input checked="" type="checkbox"/>
Certificate of Insurance	<input type="checkbox"/>
Consolidated Financial Fund	<input checked="" type="checkbox"/>
Escrow Account	<input type="checkbox"/>
Financial Statements	<input type="checkbox"/>
Letter of Credit	<input checked="" type="checkbox"/>
Liens	<input type="checkbox"/>
Security Interest	<input type="checkbox"/>
Surety and/or Performance Bonds	<input checked="" type="checkbox"/>

Appendix FF: Wyoming

Regulatory Authority

Oil & Gas Conservation Commission
PO Box 2640
Casper, WY 82602
<http://wogcc.state.wy.us>

Background

Regulation of oil and gas wells, as well as plugging and abandonment procedures under the current Wyoming program, began on Aug. 21, 1951. Revisions include 1) establishment of Underground Injection Control programs in 1981; 2) pit regulation revisions in 1984 and 1992; 3) changes in 1982 and 1991 to rules governing plugging of shallow seismic holes; 4) bonding revisions, amendment of the waste rules, and well status definitions in 1992; and 5) rules on reporting water flows and mechanical integrity testing in 1993.

Wyoming Statutes § 30-5104 created the Oil and Gas Conservation Commission and gave it authority to require that drilling, casing, or plugging wells be done in such a manner as to prevent the escape of oil or gas from one stratum into another and the pollution of freshwater supplies by oil, gas, or salt water. It also enabled the Commission to use funds collected under Wyoming Statutes § 30-5-116 (conservation tax) to plug wells and reclaim the surrounding area under the State Plugging Fund. Also under § 30-5-104, the Commission was granted authority to require the furnishing of a reasonable bond. Regulation for ground water protection began on April 16, 1981. Bonding levels for wells on Wyoming leases are established by the State Land and Farm Loan Office. The Bureau of Indian Affairs is responsible for the regulation of idle wells on the Wind River Indian Reservation.

State Plugging Efforts

Wyoming has a plugging fund supported by a conservation tax levied on oil and gas revenue, bond revocations, fines and equipment sales. Under the statute the reclamation fund can also be replenished through the disposal of abandoned equipment by public sale or by transferring it to the contractor who performs the plugging and reclamation for the commission.

Sources of Plugging Funds

Tax Excise tax

Definitions

Abandoned Well

A permanently abandoned well means a one that is no longer considered active and has been permanently plugged and abandoned, as provided by these rules, in such a manner as

to prevent migration of oil, gas, and water or other substances from the formation or horizon in which it originally occurred.

Temporarily Abandoned Well

Temporarily abandoned wells are those in which the completion interval has been isolated from the wellbore above, and the surface. The completion interval may be isolated by a retainer, bridge plug, cement plug, tubing and packer with tubing plug or any combination thereof.

Blanket Bonds

	Amount	Add'l Criteria	Number of Well
Base	\$75,000		Additional amount may be required for dormant wells or pits; Agency requires bonding for some pits

Single Well Securities

	Amount	Add'l Criteria	Depth
Maximum	\$20,000		> 2,000
Minimum	\$10,000		< 2,000

Statutory Authorities

Plugging Fund

[§30-5-104]

Authority to Regulate

[§ 30-5-104 and Rules 304, 315, and 316]

Security or Financial Assurance

Date Security First Required:	1951
Modified Since 2000 Survey	<input type="checkbox"/>
Regulatory Authority Adjustment	<input type="checkbox"/>
Separate Site Restoration Bond	<input type="checkbox"/>

Types of Security Bonds Allowed

CD	<input checked="" type="checkbox"/>
Cash	<input checked="" type="checkbox"/>
Certificate of Insurance	<input type="checkbox"/>
Consolidated Financial Fund	<input type="checkbox"/>
Escrow Account	<input type="checkbox"/>
Financial Statements	<input type="checkbox"/>
Letter of Credit	<input checked="" type="checkbox"/>
Liens	<input type="checkbox"/>
Security Interest	<input type="checkbox"/>
Surety and/or Performance Bonds	<input checked="" type="checkbox"/>

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LIST OF ACRONYMS AND ABBREVIATIONS

AARP	American Association of Retired Persons
AE	Alberta Department of Energy
AENV	Alberta Environment
ASRD	Alberta Sustainable Resource Development
CAPP	Canadian Association of Petroleum Producers
DCNR	Department of Conservation and Natural Resources
DEP	Department of Environmental Protection
EASI	Environmental Alliance for Senior Involvement
EPA	U.S. Environmental Protection Agency
EUB	Alberta Energy and Utilities Board
FAC	Fund Advisory Committee
IOGCC	Interstate Oil & Gas Compact Commission
OERB	Oklahoma Energy Resources Board
OWA	Orphan Well Association
PaSEC	Pennsylvania Senior Environment Corps
SEPAC	Small Explorers and Producers Association of Canada



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